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**Fulfilling the unmet need for psychosocial care among  
adolescents: UFDA 2022 pilot project in ULSS6**

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## Abstract

The novel coronavirus (COVID-19) crisis has highlighted the urgent need for a holistic approach to well-being, particularly for adolescents who faced unique challenges during the pandemic. The various disruptions caused by quarantine measures, changes in routines, and social isolation significantly impacted their mental health. A growing body of literature has reported the detrimental effects of the COVID-19 pandemic on adolescents' mental health, with increased rates of psychological distress and reduced life satisfaction worldwide. Italy, being severely affected during the pandemic, recognized the urgency to address the mental health gaps in young people. To address the urgent mental health needs of adolescents and their families, the legislative decree law n. 73 of 25 May 2021, converted and modified by law n. 106 of 23 July 2021, allocated 8 M EUR according to Article 33 of Law 106/21. These funds were intended to establish an innovative unit of Adolescent Neuropsychiatry, to be integrated into the Child and Adolescent Mental Health Services (CAMHS) in various regions and autonomous provinces of Italy. In response, the Veneto Region followed the guidelines outlined in the Resolution n. 1215/2021 of the regional council and allocated financial resources to establish an experimental pilot project known as the District Functional Unit for Adolescents (UFDA). The UFDA aims to comprehensively address the mental health needs of adolescents with a youth-centered approach. This study explores the data collected at the UFDA located in Padua's Local Health Unit (LHU; Azienda Unità Sanitaria Locale Socio Sanitaria (AULSS6)) and assesses the appropriateness and effectiveness of UFDA interventions against established standards of practice. The study had three main objectives: 1) Investigating the patient profile seeking help through UFDA by conducting a comprehensive needs analysis, 2) Evaluating whether UFDA has introduced improvements to the public mental health service for youth through individualized therapeutic projects and optimized intervention duration, and 3) Assessing the effectiveness of UFDA interventions in terms of psychological well-being improvements and their long-term sustainability using the Strengths and Difficulties Questionnaire (SDQ). Participants: A total of 255 adolescents participated in the study, representing approximately 71.43% of UFDA patients, and 170 parents or caregivers completed the informant version of the SDQ for adolescents. Results: The study revealed positive outcomes despite the limited number of psychotherapy sessions, with high self-referral rates and over 420 patients seeking support at UFDA during an 8-month period. The brief-focused therapy approach proved successful, with no therapeutic cycles exceeding 20 psychotherapy sessions. Most cases were successfully concluded, sent or suspended due to a

temporary suspension of UFDA and are awaiting re-engagement, although some drop-outs were noted. The evaluation of UFDA interventions for psychological well-being revealed improvements in almost all SDQ scales following the intervention. The agreement between parents and adolescents on the SDQ reports showed a moderate to low association, with concordance observed only for a few subscales, consistent with existing literature. In conclusion, the UFDA pilot project demonstrates the potential for an age-sensitive service to address the mental health needs of adolescents, emphasizing the importance of collecting data for monitoring and evaluating such services. The study provides valuable insights for improving mental health care for young people in the post-COVID-19 era and potentially serves as a model for other regions or countries facing similar challenges.

# Chapter 1

## The COVID-19 Pandemic's Impact on Adolescents' Mental Health

### 1.1 Definition of adolescence

Adolescence is the developmental phase between childhood and adulthood (Steinberg, 2005). Many aspects of this period are driven by biological processes, with puberty marking the onset (Goddings et al., 2019). However, the conclusion of this period is culturally defined, mainly linked to the assumption of adult-like roles and responsibilities, such as family formation and starting work (Steinberg, 2005).

Puberty is defined as the neuroendocrinological development of glands and gonads peaking with reproductive competence. According to findings (2005), the age at which puberty is reached has changed over the years. In pre-modern societies, the average age of puberty was 16 or 17, when people began their transition to adult-like roles, making the length of this interval only a few years long (Steinberg, 2005). More recently, puberty has dropped dramatically, with girls getting their period around 12.5 years of age, whereas boys hit puberty with two years of delay (Goddings et al., 2019; Steinberg et al., 2015). Furthermore, full entry into adult-like roles is delayed well beyond 20 years, with the prolongation of formal education and economic dependency on the family of origin (Steinberg, 2005).

The transitional nature of adolescence does not only entail physical maturation but also mental and emotional development into a responsible and autonomous adult. It is a stage of crucial importance for setting the foundation for adult life, including education, relationships, and career goals. During this time, individuals form important lifestyle habits such as exercise, diet, substance use, and sleep (Steinberg, 2005). Amongst many, establishing and maintaining close relationships, developing identity and future perspectives, and gaining independence, self-esteem, and self-control are some of the critical developmental tasks of adolescence (Konrad et al., 2013). All in all, physical, cognitive, interpersonal, and socio-emotional changes alter adolescents' strengths and weaknesses, shaping their adaptation (Davey et al., 2008; Steinberg et al., 2015).

Anticipation of the onset of puberty and the delay in taking on adult status resulted in an expansion of adolescence to a decade. As a result, youth have sexually mature bodies and activated brains before taking adult status, which characterizes these years with unique

opportunities and vulnerabilities (Goddings et al., 2019; Steinberg, 2005; Steinberg et al., 2015).

## **1.2 A period of opportunities and vulnerabilities**

Despite its transitional nature, adolescence is a period of resilience and strength. First, during this interval, there is an improvement in the immune system, agility, resistance to heat, cold, physical stress, and most injuries (Dahl, 2004). Second, adolescence is a period of tremendous plasticity as maturational brain processes continue throughout this period: many synapses are pruned according to the rule: “use or lose” in an experience-dependent manner, making the recruitment of neural resources more efficient for the task at hand (Konrad et al., 2013; Paus et al., 2008). There is also an increase in white matter that connects various brain regions, enabling the transmission of neural information rapidly (Konrad et al., 2013). For example, the connection between the prefrontal cortex and sensory and subcortical structures becomes stronger during adolescence, indicating increased control of frontal brain regions on cognitive and emotional processes. These organizational processes are associated with improved cognitive and social-affective functions, such as better reasoning skills, faster reaction time, and perspective-taking abilities (Blakemore & Mills, 2014a; Konrad et al., 2013). Remarkably, the further maturation of the frontal cortex translates into a progressive improvement of executive functions – high-order cognitive processes that regulate thoughts and actions to enable an individual to adjust effectively to new and challenging situations (Blakemore & Choudhury, 2006).

The noticeable plasticity of the brain during adolescence allows environmental factors to impact its’ structure and function substantially. Indeed the profound re-organization of neural circuits is not determined solely by biologically inherent processes; instead, there seems to be a strong interaction between environmental and genetic factors (Konrad et al., 2013). On the one hand, this high malleability of neural circuitry makes intellectual and emotional development possible, but it also increases the risk of adverse environmental influences (Konrad et al., 2013; Steinberg, 2005). In fact, despite being a time of enormous development and potential, adolescence is also a time of considerable vulnerability. Overall, mortality and morbidity rates increase at a 200% rate in adolescence, not explicable by cancer, heart disease, or infections but rather due to emotional and behavioral regulation problems (Dahl, 2004). Mainly, adolescents are more likely to engage in sensation-seeking, risky, and reckless behavior that, though not formally considered psychopathology, increases the likelihood of



adverse outcomes (Steinberg et al., 2015). Notably, increased rates of accidents, alcohol and substance abuse, self-harming behavior, as well as health problems related to promiscuity are among the significant sources of death and disability in youth (Dahl, 2004). Studies show that both genders engage in risky behavior at a similar rate, although qualitative differences remain. For instance, boys typically drink beer and hard liquor, and girls prefer wine and sparkling wine. Boys drink alcohol, smoke tobacco products, and use illegal drugs more frequently and in more significant quantities than girls. Moreover, boys are at a higher risk of accidents and take more dangerous risks while driving, while girls are likelier to engage in unhealthy eating habits (Konrad et al., 2013).

The high frequency of risky behavior during adolescence emphasizes a paradox: in most domains, adolescents have advanced reasoning and decision-making abilities compared to children (Dahl, 2004). They are nearly as competent as adults in assessing the consequences of certain risky behaviors. Nevertheless, despite these cognitive improvements, adolescents seem more prone to irrational and emotionally driven behavior (Dahl, 2004; Konrad et al., 2013; Steinberg, 2005). The reason for this paradox lies in the imbalanced development of the adolescent brain, where subcortical, limbic areas mature earlier compared to the prefrontal areas. Studies using imaging techniques have revealed that adolescents exhibit increased activity in limbic regions when faced with emotional situations. For instance, research conducted by Galvan et al. (2006) discovered that in adolescents, the expectation of a reward is linked to a more robust activation in the nucleus accumbens compared to children and adults (Galvan et al., 2006). Interestingly, these researchers also discovered a relationship between the level of activation in the nucleus accumbens and the adolescent's tendency to take risks (Galvan et al., 2007). This does not mean that adolescents are unable to make rational decisions; instead, in emotionally charged situations (such as when in the presence of peers or when a reward is involved), there is a higher chance that rewards and emotions will affect behavior, compared to the impact of rational decision-making processes (Chein et al., 2011; Galvan et al., 2006, 2007; Konrad et al., 2013).

Furthermore, adolescence is a critical developmental stage for mental health as many, if not most, disorders rise in prevalence or have their onset during this period. Accordingly, the findings of the National Comorbidity Survey Replication study carried out between February 2001 and April 2003 in the United States (Kessler & Merikangas, 2004) suggest that the age at which psychological problems are most likely to develop is 14 years. Especially anxiety disorders, bipolar disorder, conduct disorder, depression, eating disorders, psychosis, and substance use disorder are most likely to emerge during adolescence (Kessler et al., 2005; Paus

et al., 2008). Furthermore, although not every adolescent develops a clinically meaningful psychological problem into adulthood, most persistent and perennial psychiatric problems afflicting adults have begun by adolescence (Johnson & Wolke, 2013; Kessler et al., 2005; Paus et al., 2008). In fact, different disorders show diverse trajectories (Costello et al., 2003; Davey et al., 2008; Polanczyk et al., 2015). While disorders related to dysregulated behavior, such as substance use disorder and adolescent-onset conduct disorder, show a peak in prevalence in adolescence before declining into adulthood, mood and anxiety-related disorders increase in adolescence, remaining stable throughout one's life (ABS National Survey, 2007; Steinberg et al., 2015). Remarkably, major depressive disorder (MDD) is seldom seen before puberty (Davey et al., 2008; Steinberg et al., 2015), yet adolescents face a significantly increased risk of developing MDD (Angold et al., 1998; Davey et al., 2008; Steinberg et al., 2015). According to conservative estimates, the point prevalence of MDD changes from less than 5% to over 10% during puberty (Angold et al., 1998). This is consistent with more recent research findings, which suggest that the prevalence of MDD increases almost linearly from puberty, with a 1-month prevalence of 2% in late childhood (Costello et al., 2002, 2003), 6% in late adolescence, and a lifetime prevalence of approximately 25% by the mid-twenties. (Angst & Dobler-Mikola, 1984; Davey et al., 2008).

During this time, new patterns of gender differences in psychopathology become evident. For example, while depression rates are comparable among boys and girls prior to puberty, by the middle of adolescence, females are twice as likely to have depression as males, a trend that continues into adulthood (Hankin & Abramson, 2001; Steinberg et al., 2015). In contrast, opposite trends emerge for behavioral disorders (Moffitt & Caspi, 2001). The reason for significant gender differences in psychopathology seems to be associated with emerging gender differences in typical personality traits and behavior seen around the same period of life (Steinberg et al., 2015).

Moreover, during adolescence, symptoms of some disorders become similar to those seen in adults (Steinberg et al., 2015). For example, while depressed children tend to be irritable, adolescents suffering from depression are more likely to manifest low mood and hopelessness, likewise depressed adults. The change in manifestations of psychopathology is partially associated with cognitive development, as adolescents become more capable of abstract and hypothetical thinking (Steinberg et al., 2015). In fact, cognitive development is thought to account for increased vulnerability to depression during adolescence, in combination with adverse life events (Hankin & Abramson, 2001).

Therefore, adolescence is a period of vulnerability to psychopathology in general, as the list of psychological problems not associated with adolescence is probably shorter than the list of psychological problems that are. Nevertheless, there are also many adolescents that pass through this period with no more than temporary or minor signs of psychopathology. According to the diathesis-stress model, any psychological disorder's onset results from the interaction between two critical components (Monroe & Simons, 1991; Seligman & Maier, 1967). The first component is the presence of a diathesis, a vulnerability for a particular disorder within an individual, which can be genetic, biological, social, or psychological. The second component is a stressor, which refers to a series of difficult life circumstances that subsequently trigger the manifestation of the disorder (Heeringen & Mann, 2014). The activation of an underlying vulnerability, however is dependent on exposure to stressors. (Steinberg et al., 2015). Undoubtedly, certain risk factors make some individuals more susceptible to difficulties than others, and the transition to adolescence can activate latent problems by triggering pre-existing risk factors and bringing about new risks specific to this stage of development through a cumulative chain of risk (Steinberg et al., 2015). Accordingly, even though biological change is a defining feature of adolescence and a critical contributor to psychopathology, environmental factors also have a crucial role in developing psychopathology during this phase of life. Adolescents who were already vulnerable in childhood, including those with significant gaps between different developmental domains and those who faced severe challenges or had limited support, are at the greatest risk for psychopathology during adolescence (Costello et al., 2002). In particular, adolescents who have faced early life stress (ELS; e.g., child abuse and neglect, domestic violence, and parental psychopathology) are more prone to develop both internalizing (Nugent et al., 2011) and externalizing disorders (Dube et al., 2003). They are also more sensitive to perceived threats (Garrett et al., 2012), struggle with regulating their emotions (Villalta et al., 2018), and tend to use maladaptive coping strategies such as avoidance, substance use, and engaging in risky behaviors (Walsh et al., 2010). Further environmental risk factors include developmental challenges regarding the change in major contexts in which adolescents spend time (the family, the peer group, school) but also the economy, the labor market, the mass media, moral concepts and values, and the broader historical context (Smith & Rutter, 1995). Concerningly, although the transition from childhood to adulthood has always been challenging, in the past few decades, there has been a gradual and consistent rise in the prevalence of adolescents suffering from psychological problems. In fact, mental disorders are now the primary cause of disability among people between the ages of 10 and 24 in all European Union countries in 2019

(Armocida et al., 2022). This is particularly worrying, as there has been a 32% increase in the number of years of life lost due to eating disorders since 1990 and given the higher rates of emotional and behavioral problems, substance abuse, and completed suicide with successive generations (Armocida et al., 2022; Collishaw, 2015; Keyes et al., 2019; Mishina et al., 2018; Parodi et al., 2022; Smith & Rutter, 1995; Steinberg et al., 2015). The National Institute of Mental Health (NIMH) released data that showed that about 49.5% of US adolescents had experienced some form of mental disorder (Kessler & Merikangas, 2004). Furthermore, the At-Risk Behavior Survey (YRBS) conducted by the Centers for Disease Control and Prevention between 2009 and 2019 indicated a significant change in the frequency of self-harming behavior, a growing concern in youth mental health (CDC, 2019).

The importance placed on the role of historical context in mental health has increased as a result of the COVID-19 pandemic, which has caused unparalleled disruptions to our daily lives on a global scale (De France et al., 2022). This has been the first time in modern history that such a large portion of the world population has simultaneously experienced unprecedented physical, social, and psychological impacts, which created a sense of collective trauma globally (Duane et al., 2020). According to the diathesis-stress model, the prolongation of the pandemic could be seen as a significant stressor resulting in both immediate and lasting mental health repercussions for adolescents (Petruzzelli et al., 2022), especially considering their vulnerability to mental health problems even before the pandemic (Hertz & Barrios, 2021). Studies carried out during the COVID-19 pandemic have shown a significant increase in mental health issues among young people worldwide, with a particular focus on anxiety, depression, substance abuse, and self-harm (Cohen et al., 2021; De France et al., 2022; Ezeoke et al., 2022; Mensi et al., 2021; Orgilés et al., 2022; Petruzzelli et al., 2022; Rosen et al., 2021; Rossi et al., 2020; Shukla et al., 2022, 2022). The traumatic impact of the pandemic is particularly true for the adolescent population who had to go through social isolation at a time when the importance of social connections with peers is unparalleled (Blakemore & Mills, 2014a), conflicts with parents are highest (Branje, 2018), and the onset of psychological problems can lead to lifelong vulnerabilities and increase the likelihood of future psychological difficulties (Costello et al., 2002; De France et al., 2022; Paus et al., 2008).

### **1.3 The Impact of Covid-19 on Adolescent Mental Health**

Wellness plays a critical role in transiting the development phase of adolescence, which is best captured from a holistic point of view (Ezeoke et al., 2022); as the World Health

Organization (WHO) defines it as the state of complete physical, mental and social well-being (WHO, 1948).

The holistic approach to well-being has become a real urgency with the novel coronavirus (COVID-19) crisis (Ezeoke et al., 2022), which was declared to be a Public Health Emergency of International Concern on 30th of January 2020, by the WHO (WHO, 2020). The virus rapidly spread, leaving few countries unaffected and causing fatalities in every corner of the world (De France et al., 2022). On 11th of March 2020, WHO declared COVID-19 to be a pandemic and an international health emergency (WHO, 2020), leading many countries to implement Lock Down or Movement Control Order (MCO) measures to prevent further infections and fatalities (Amran, 2022). According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), during the first wave of the pandemic, in around 190 countries, schools were shut down, affecting 1.52 billion children and adolescents, which accounts for almost half of the global student population (UNESCO, 2020).

Even though the COVID-19 crisis regards primarily physical health, it has substantially impacted the mental health of whole societies (United Nations, 2020). While youth are less likely to be infected with the virus or to have long-lasting physical harm, they are not more immune to the psychological impacts of the pandemic (Cohen et al., 2021; De France et al., 2022; Panda et al., 2021). This is further compounded by the already increasing rates of internalizing and externalizing problems (Keyes et al., 2019; Mishina et al., 2018; Parodi et al., 2022; Smith & Rutter, 1995; Steinberg et al., 2015) as well as already reported high levels of loneliness in this population (Beam & Kim, 2020), even before the pandemic (Nyqvist et al., 2016; Williams & Braun, 2019). Furthermore, since adolescents have not yet fully developed the prefrontal cortex, they may be less able to make sense of and cope with the pandemic (Blakemore & Mills, 2014a).

During the past two years, adolescents went through unique challenges such as repeated quarantine measures, changes in educational and recreational routines, disruptions to social relationships, the fear of getting infected, infecting or even losing loved ones, frequent misinformation about the virus and the persistent uncertainty over health, finances of family members and generally over the future (Shukla et al., 2022; United Nations, 2020). The imposition of unfamiliar safety measures to slow down the spread of the virus and protect public health, such as stay-at-home orders, social distancing measures, and wearing masks, precluded opportunities for social interaction and increased physical separation from loved ones, leaving adolescents socially isolated at a time when the salience of peer connection is at its highest (Brown & Larson, 2009), and the need for autonomy is crucial (Blakemore & Mills,

2014b; Cohen et al., 2021). In addition to the safety measures, many people have also made personal efforts to avoid infecting others or being infected by avoiding in-person gatherings, even with members of their own family. Moreover, the concomitant shift to remote learning deprived students of counting on resources found within school walls which helped them cope with stressors and maintain a healthy lifestyle (Ezeoke et al., 2022). While these actions were important for reducing the transmission of the virus, they led to feelings of isolation and disconnection for many (De France et al., 2022).

A growing body of literature reports the deleterious effects of the COVID-19 pandemic on adolescents' mental health, even when direct exposure to the virus itself was limited (Meherali et al., 2021; Singh et al., 2020; Qu et al., 2020). Both cross-sectional and longitudinal studies conducted worldwide during the pandemic indicated increasing rates of externalizing and internalizing symptoms in youngsters, with a significant decrease in life satisfaction and perceived wellness (Cohen et al., 2021; De France et al., 2022; Ezeoke et al., 2022; Zhou et al., 2020). For instance, a two-year longitudinal study reported that, before the pandemic, only 31.7% of the sample had clinically significant internalizing problems; this proportion in 2020 rose to 56.7% (Rosen et al., 2021). Similarly, the proportion of externalizing problems in a sample of adolescents in a longitudinal study rose from 17.4% in 2018 to 56.2% in 2020 (Rosen et al., 2021). Likewise, The UK Household Longitudinal Survey, which has been collecting data from youth (ages 10–16) since 2009, revealed a significant decrease in the rate of adolescents with "low-level" emotional and peer relationship difficulties, as well as in the rate of those with a "high-level" of prosocial behaviors (Hu & Qian, 2021). In addition, in Spain, a 10-year longitudinal study by Ezpeleta et al. revealed that conduct, peer, prosocial, and total problems increased following the lockdown (Ezpeleta et al., 2020).

Longitudinal studies focusing on the impact of the pandemic on anxiety and depression also report deterioration in these symptom domains. In an Australian study, adolescents (ages 13-16) completed questionnaires 12 months before COVID and two months after government restrictions and distanced learning were introduced. The study demonstrated moderate yet significant increases in symptoms of depression and anxiety and a decrease in overall life satisfaction, especially among girls (Magson et al., 2021). Furthermore, a study conducted in China reported significant increases in depressive symptoms and decreases in sleep duration among adolescents aged 11-16 during the COVID-19 pandemic (Liao et al., 2021). Consistently, in the United States, a study found that the healthy group of adolescents with fewer symptoms of depression, anxiety, and emotion dysregulation before the pandemic showed the most significant increase in symptoms compared to adolescents with the high

symptoms group. This increase was larger than what would have been predicted by previous trajectories, and deviations in individual trajectories were associated with a greater perceived impact of the pandemic (De France et al., 2022). Additionally, the same study found that adolescents who had a decreasing trend of mental health symptoms in the two years prior to the pandemic were the ones who had a sharper upward deviation in their mental health trajectory during the pandemic (De France et al., 2022). These results are consistent with a previous study which revealed that the COVID-19 pandemic had a greater negative impact on previously healthy adolescents, causing their anxiety and depression symptoms to reach levels comparable to adolescents who had experienced early life stressors (Cohen et al., 2021). In other words, the COVID-19 pandemic has caused a considerable deviation in the mental health trajectory of adolescents. This held true notwithstanding the limited direct exposure to the virus (Cohen et al., 2021). The only longitudinal population-based study conducted in Iceland (questionnaires completed in 2016, 2018, and October 2020) also revealed a rising pattern in depressive symptoms and a decreasing pattern in mental health in youth aged 13-18 years during the pandemic (Thorisdottir et al., 2021).

To sum up, the literature reports a dramatic increase in the prevalence of psychological problems in adolescents worldwide, especially concerning anxiety, depression, substance use, and self-injury. However, these findings are not consistent across all studies (Chavira et al., 2022; Y. Li et al., 2021; van der Laan et al., 2021), as in some instances, longitudinal data suggests improvements in some mental health domains such as conduct problems (Hu & Qian, 2021), substance use (Clare et al., 2021; Thorisdottir et al., 2021), and sleep (Y. Li et al., 2021). However, in most longitudinal studies, the pandemic seems to have negatively impacted mental well-being, increasing depressive and anxiety symptoms and peer and social problems (Chavira et al., 2022). The inconsistent findings are potentially due to the methodological heterogeneity of the studies and differences in regional COVID-19 rates and measures against the pandemic (such as differential restriction measures across countries), as findings suggest that improvements in the pandemic situation seem to contribute to improvements in mental health outcomes (Hawes et al., 2022). This hypothesis is supported by the results of a study conducted in New York, which examined changes in youth mental health during the pandemic. The study indicated that depression and anxiety symptoms reached their highest point between April and May of 2020 when infection rates were at their peak. Subsequently, there was a decrease in symptoms from May to July, which co-occurred with declines in pandemic-related stressors and COVID-19 infection rates. This finding suggests that improvements in the pandemic situation contribute to improvements in mental health outcomes (Hawes et al., 2022).

Alternatively, especially regarding the decreasing pattern of the prevalence of anxiety-related disorders, the quarantine and other restriction measures may have promoted avoidance, temporarily relieving some students from school-related stressors and allowing them to avoid situations that could lead to anxiety symptoms, such as social interactions or academic demands (Chavira et al., 2022).

Some adolescents were more at risk for developing mental health problems than others. Particularly, the deleterious changes were more pronounced among girls (Chavira et al., 2022; De France et al., 2022; Hu & Qian, 2021; Zhou et al., 2020), older adolescents (Zhou et al., 2020), families of low economic status, single-parent households and those who lived in higher risk areas (Chavira et al., 2022), marginalized groups (Hawke et al., 2021), individuals with pre-existing mental health problems (Essau & de la Torre-Luque, 2021) or neurodevelopmental disorders (Raw et al., 2021). Additionally, among the risk factors, researchers reported decreased contact with peers (Cohen et al., 2021), family conflict (Amran, 2022), the severity of perceived lifestyle change, and a general sense of helplessness and uncertainty (De France et al., 2022), massively passive use of internet or videogames as a coping strategy (Cohen et al., 2021), poor sleep routines, and online learning difficulties (Amran, 2022) as predictors of increased mental health problems over time. On the other hand, fewer hours per day spent on the internet (Rosen et al., 2021), higher awareness of COVID-19, problem-focused coping style (such as prevention and control measures) (Shukla et al., 2022), social interactions, exercise (Cohen et al., 2021) are amongst the protective factors against poor mental health.

### **1.3.1 The Impact of Covid-19 on Adolescent Mental Health in Italy**

Italy was the first and one of the worst-hit countries in Europe by the pandemic, especially in the first wave, with an essential improvement in 2021 when the vaccination campaign started. 16 million infections and over 160 thousand deaths were reported related to COVID-19 between March 2020 and April 2022. The Italian government was the first in Europe to impose quarantine and social distancing measures to contain the spread of the virus in approximately two months between March 9, 2020, and May 4, 2020, during which around 60 million Italians were instructed to remain at home, resulting in dramatic economic, social and psychological consequences (Caffo et al., 2020).

The literature provides compelling evidence of the psychological sequelae that the pandemic had in countries that have been most severely affected, including Italy (Mensi et al., 2021; Rossi et al., 2020). Consistent with the research conducted worldwide (Chavira et al.,



2022; De France et al., 2022; Ezeoke et al., 2022; Y. Li et al., 2021; Magson et al., 2021; Zhou et al., 2020), studies documented the psychological impact of the confinement and restriction measures on Italian adolescents' emotional and behavioral state (Barbieri et al., 2022; Caffo et al., 2020; Mensi et al., 2021; Oliva et al., 2021; Orgilés et al., 2022; Petruzzelli et al., 2022), with increased symptoms of emotional instability, boredom, loneliness, difficulty concentrating, irritability, restlessness, sleeping problems, and worries (Orgilés et al., 2020). A longitudinal study examined the change in the psychological well-being of youth over time in the three most affected European countries: Italy, Spain, and Portugal, and highlighted an increasing pattern in all of the examined symptom domains (anxiety, sleep, and mood disturbances, behavioral and cognitive difficulties). Interestingly, Italian youth at first adjusted better than Portuguese and Spanish youth. However, they were more psychologically impacted by home confinement over time (Orgilés et al., 2022). One possible explanation for this disparity could be the varying restriction measures implemented in these countries. The psychological impact was more severe, where home confinement lasted longer, and more stringent restrictions were applied. In Italy, the State of Alarm was initially supposed to last from March 10th to April 3rd, yet it was prolonged multiple times beyond the original deadline and lasted until October 15th (Orgilés et al., 2022). Previous studies also had indicated that prolonged confinement leads to more significant frustration and demoralization among individuals who are confined (Brooks et al., 2020; Rossi et al., 2020). Therefore, the extended period of confinement and the challenging conditions that persisted, characterized by a high incidence of infections and fatalities, could be a possible explanation for the more significant deterioration of the mental health of Italian youth (Orgilés et al., 2022). Furthermore, the same study found a positive relationship between parental stress and psychological symptoms of children (Orgilés et al., 2022), in line with the previous studies which also reported that confinement creates a significant amount of stress for parents, affecting their ability to provide support to their children (Gaslini, 2020; Spinelli et al., 2020). This reinforces the theory that the attitude and the way through which parents interact with an emergency has a substantial impact on the psycho-behavioral well-being of their children, with a positive relationship between the degree of stress caused by the pandemic in parents and behavioral and emotional symptoms in children and adolescents (Gaslini, 2020; Orgilés et al., 2022; Spinelli et al., 2020). Lastly, a very recent report by the Italian Institute of Public Health indicated that two out of five adolescents in Italy (aged 11 to 17) declared that the pandemic negatively affected their overall life satisfaction and mental health, especially regarding managing emotions and stress. The negative impact was primarily observed in females and increased with age. Regarding

mental health, 52% of girls reported a negative impact compared to 31% of boys. This response was observed in 29% of 11-year-olds (33% of girls and 25% of boys) and in 53% of 17-year-olds (66% and 41%, respectively) (Istituto Superiore di Sanita, 2023).

Mental health services in Italy are provided according to a community-based model of mental health care, which seeks to provide care and promote social integration, making services as accessible, equitable, and responsive to the needs of individuals, families, and communities as possible (D'Agostino et al., 2020). However, due to the COVID-19 pandemic, hospitals were primarily focused on combating the virus (D'Agostino et al., 2020). On March 7th, 2020, the national welfare authority issued a directive to block all but the essential outpatient services (such as emergency rooms and dialysis, radiotherapy, and chemotherapy) proposing mental health services to shift to online platforms to provide assistance, yet only for emergencies or specific urgent patient requests (Caffo et al., 2020; D'Agostino et al., 2020; Pelizza & Pupo, 2020a). As a result, therapy and counseling for individuals have been interrupted in many cases, and adolescents have largely been neglected (Pelizza & Pupo, 2020a), which led to significant harm (de Girolamo et al., 2020; Petruzzelli et al., 2022). Nevertheless, a helpline dedicated to youth called "Telefono Azzurro" remained fully operational during the same period, offering phone and chat assistance 24 hours a day. A significant increase of 14.4% in requests related to mental health issues and a 22.6% increase in contacts made via chat have been recorded. Similarly, the 114 Emergency Services, co-founded by the Department for Family Policies of the Presidency of the Council of Ministers, reported a rise of 21.5% in the number of cases related to abuse and violence and 38.5% in cases related to mental health issues (Caffo et al., 2020). Particularly, a survey, conducted through the #PRESTOinsieme project portal on 5008 individuals during the lockdown in the spring of 2020, reported that nearly 90% of young people aged 16 and over experienced psychological distress. Additionally, almost 50% of these individuals displayed symptoms of depression (Lorenzoni et al., 2022). Furthermore, a longitudinal study conducted in Bari between 2019 and 2021 found a significant upward trend for urgent counseling requests in the Emergency Room (ER) of the University Hospital of Bari for traumatic, somatic, psychotic, and acute psychopathological symptoms, as well as for self-injuring behaviors or suicidal attempts. Most patients were adolescents, females, and already on psychotropic medications. Even though during the COVID-19 second wave of the pandemic, the specialist outpatient services for mental health have been gradually restored, there has been recorded a further increase in ER visits. More concerning was the rise in the proportion of counseling requests for psychotic symptoms and self-harming behaviors, which were becoming more severe and diversified over time, compared to pre-pandemic statistics

(Petruzzelli et al., 2022). The authors suggested that the increase in ER visits during this period may be related to the decreased availability of outpatient specialist care and not-in-person alternatives. Their further increase in the second wave of the pandemic supports the theory that the persistent nature of the pandemic had deleterious and long-lasting effects on the psychological well-being of youth, especially on those with poor mental health history before the pandemic (Petruzzelli et al., 2022).

In sum, children and adolescents were the first to experience the consequences of the decisions made regarding the introduction of containment measures for the virus (De France et al., 2022; Ezeoke et al., 2022; Gaslini, 2020; Istituto Superiore di Sanità, 2023). The absence of a routine and feelings of isolation during the pandemic had a negative impact on adolescents' mental and emotional health all over the world (Cohen et al., 2021; De France et al., 2022), exacerbating the condition of those who were already suffering from existing mental health problems (Essau & de la Torre-Luque, 2021; Petruzzelli et al., 2022; Raw et al., 2021). Especially the closure of schools and the subsequent activation of distance learning have made experiencing close relationships and mutual support within school walls impossible, which are essential for well-being in adolescence (De France et al., 2022; UNESCO, 2020). Even though after the first year of the pandemic, lockdown and social distancing measures have been carefully balanced with adolescents' mental health risks, studies reported that the persistent nature of the pandemic have had a damaging effect on adolescents' well-being, with plausible long-term implications, especially on those with poor mental health prior to the pandemic (Essau & de la Torre-Luque, 2021; Petruzzelli et al., 2022; Raw et al., 2021).

The pandemic emphasized once more the necessity of a special attention to the mental and social well-being of whole societies (Caffo et al., 2020; De France et al., 2022; Pelizza & Pupo, 2020a). The negative impact of COVID-19 on adolescents' mental health highlighted the urgent need to implement a mental health care service for this special population. This necessity is particularly strong, as mental health problems that emerge during adolescence can create significant vulnerabilities for the onset and persistence of various mental health issues well into adulthood (Costello et al., 2002, 2003; De France et al., 2022). Studies suggest that such a service should keep young people's unique needs at the core of reconstruction plans in coordination with schools, as teachers have an essential role in the identification as well as in the prevention of any psychological problem (Caffo et al., 2020; Petruzzelli et al., 2022; Zhou et al., 2020).

Founded on the principle of translating research into policies, in May 2021, a Legislative Decree was passed in Italy, that was later converted into Law 106 in July of the same year,

providing resources to the National Health Service Units and Companies to strengthen the department of child and adolescent neuropsychiatry by recruiting health professionals, social workers and psychologists. The main aim was to address the psychological needs of youth, which emerged in the context of the urgent measures related to the pandemic, and to prevent the long-term psychological effects of the pandemic. In September 2021 the Veneto Region proposed the establishment of an experimental Adolescent Neuropsychiatry Unit called “Unita Funzionale Distrettuale Adolescenti” (District Functional Unit for Adolescents) (Delibera della Giunta Regionale, 2021), which will be described in detail in the second chapter.

## Chapter 2

### Public Mental Health Care System for Adolescents in Italy

#### 2.1 Pre-pandemic situation

Under the Italian Constitution, health is a fundamental right guaranteed by the National Health Service (NHS), established by the law n.833 of 1978 (Istituzione del Servizio Nazionale, 1978). The NHS is a system of structures and territorial services that aim to provide all citizens with equal and universal access to health services, as mandated by Article 32 of the Constitution (Senato della Repubblica, n.d.). According to the article 32 of the Constitution, the preservation of physical and mental well-being must be carried out while upholding the dignity and freedom of each person, and thus medical treatment cannot be forced on anyone except by law (Ministero della Salute, 2019). Consistently, on May 13th of the same year, the Italian Parliament approved the Italian Psychiatric reform law called “The Basaglia Law 1978/180” which led to the closing of mental health hospitals and establishment of community based mental health facilities for the first time in Europe (Lora, 2009). The 1978 psychiatric reform included four main components: (1) the gradual closure of mental health hospitals by not admitting new patients (2) establishing of General Hospital Psychiatric Units (GHPU) with a maximum of 15 beds for acute cases, (3) implementing more restrictive criteria for compulsory admissions, (4) and establishing Community Mental Health Centres (CMHCs) that provide psychiatric care to specific geographic areas. The Basaglia law was designed to provide guidance, yet the responsibility of drafting and implementing specific regulations was delegated to Italy's 20 regions. Moreover, each region is divided into several Local Health Units (LHU), responsible for specific geographic catchment areas. Every region receive governmental funds for health care and has a large degree of autonomy in the distribution of their budget to various departments (de Girolamo et al., 2007).

Currently there are 183 Departments of Mental Health (DMH) that cover the entire country. The DMH is responsible for the specialist mental health care in the community, for planning and management of all resources related to prevention, intervention, and rehabilitation within a defined catchment area, corresponding to that of a LHU (Lora, 2009). Furthermore, the DMH is also in charge of coordinating a diverse range of professionals including psychiatrists, psychologists, nurses, social workers, occupational therapists, rehabilitation counsellors, and auxiliary staff that operate across both inpatient and outpatient services (Pelizza & Pupo, 2020b). Additionally, access to mental health services usually does not

require a referral from a general practitioner (GP) or other healthcare professional. Individuals seeking mental health services can contact a local mental health clinic in order to arrange an initial assessment, which is ordinarily free of charge, although some regional and service-specific differences may apply (Pedrini et al., 2015).

Even though such departments are widespread in all Italian regions, the complexity within the DMH varies. With regard to the types of mental health facilities present, the DMH are quite complete, including Centres of Mental Health Care (CMCH), Day Care Facilities (DCFs), General Hospital Psychiatric Units (GHPUs) and Residential Facilities (RFs). CMCH are responsible for all community-based adult psychiatry services in outpatient settings and manage the therapeutic and rehabilitation services in DCFs and RFs. While RFs serve as permanent homes for individuals with disabilities, DCFs are open only for around 8 hours a day and provide personalized therapeutic-rehabilitative programs aimed at promoting autonomy, interpersonal relationships, and job placement (Lora, 2009). Lastly, within the DMHs, acute inpatient care is delivered in GHPUs, with a maximum of 15 beds available (Ministero della Salute, 2022).

On the other hand, DMHs generally offer a lower complexity of specialized clinical services, with many focusing primarily on adult psychiatry and providing fewer services for child psychiatry, alcohol and drug abuse treatment (Lora, 2009). In particular, the Child and Adolescent Mental Health Services (CAMHS) are operative throughout the country within 146 Italian Health Districts, each serving patients aged between 0 and 18 within a defined catchment area. Most CAMHS are under the DMH, and they are responsible for the prevention, assessment, and treatment of both psychiatric and neurological conditions (Pedrini et al., 2015).

The responses to psychological disorders in adolescence appear to be particularly critical, especially at the time of acute episodes. However, the situation of CAMHS is inconsistent across different regions and, in some cases, is inadequate (Ministero della Salute, 2013). In fact only a small portion (20%) of adolescents with emotional and behavioral problems end up consulting a CAMHS (Frigerio et al., 2009). Particularly, there is a highly fragmented situation in the CAMHS with an inadequate differentiation of demands, resulting in an inappropriate allocation of resources based on case complexity. For example, individuals with severe mental health conditions may receive similar treatment pathways to those with less severe disorders, and vice versa (Ussai et al., 2022).

Furthermore, the transition between Child and Adolescent Mental Health Services (CAMHS) and Adult Mental Health Services (AMHS) is primarily based on age boundaries. The distinction of mental health service merely based on the age criteria, has been under review

in recent years, with concerns that this division does not serve the needs of adolescents (Signorini et al., 2018). Particularly, in about two-thirds of cases, AMHS are unable to provide adequate health response for young people transitioning from CAMHS (Ussai et al., 2022). A longitudinal study from Northern Italy reported that only one out of five adolescents who have attended CAMHS moved to AMHS. Particularly, those who were seeking care in AMHS were more likely to have severe mental health problems such as psychosis, personality disorders, pervasive developmental disorders, and those who needed admission to inpatient units or who were on psychotropic medications. On the other hand more common psychological problems such as mood and anxiety disorders, eating disorders and hyperkinetic disorders were not associated with the transfer to AMHS (Stagi et al., 2015).

These results suggest that adult psychiatric services are only offered to a limited number of adolescents who require them (Signorini et al., 2018). In other words, there is a treatment gap in the provision of psychological services and very often adolescents in need for ongoing mental health care fall ‘through the gap’. This is likely to be induced by the confusion of the concepts of “transition” and “transfer”. While the former refers to a process with various concerns related to a critical period for youth in need for mental health services, the latter entails distinct CAMHS and AMHS services with a discontinuation of care in CAMHS and the subsequent resumption of care in AMHS. The underestimation of the transition from child to adult mental health services results in a significant drop-out of treatment and care, especially for those with less severe psychological problems (Stagi et al., 2015). Furthermore, little engagement with AMHS may be related not only to difficulty experienced by young people during transfer, but also to refusal by young patients or parents because of the stigma related to facilities serving severe adult patients affected by chronic disorders (Pedrini et al., 2015). This is particularly important considering the recent guidelines that stress the importance of creating user-friendly settings that are more appealing to young patients in need for treatment and to their families (Pedrini et al., 2012). As a result, young people with anxiety, depression, and eating disorders seem to prefer private specialists who are working in settings that are more acceptable than institutional ones (Stagi et al., 2015). The preference for private services brings about high socioeconomic costs, creating an uneven, discontinuous and fragmented provision of mental health care for adolescents (Ussai et al., 2022).

The Italian National Action Plan for Mental Health between 2013 - 2020 (NAPMH) has also recognized these issues and developed specific goals and measures to address them. The NAPMH aimed to establish care pathways, improve the organization and integration of mental health services, and set indicators for monitoring and evaluation of such services. The

NAPMH plan emphasized the need for a tailored multidisciplinary care for adolescents, with interventions appropriate for the developmental stage, and context of the individual, rather than solely based on the severity of the disorder. This includes the involvement of the family and the coordination with other institutions as well as with the territory (Ministero della Salute, 2013). Despite the existence of a dedicated national plan, Italian regions have implemented less than half of the NAPMH objectives (Ussai et al., 2022).

From a life-course perspective, the discontinuity of treatment and care can have negative long-term consequences for individuals, since the morbidity and mortality rates due to mental health conditions are rising (Armocida et al., 2022) and approximately half of these conditions emerge by the age of 14 and 75% by the age of 24 and persist throughout adulthood (Kessler et al., 2005). Moreover, these numbers have been estimated to further increase, impacted by the COVID-19 pandemic and by other 21st-century stressors (e.g., Climate Change, Ukrainian War) (Barchielli et al., 2022). The rise in psychological problems is further complicated by the change in the expression of distress in the current generation of adolescents through non-traditional symptoms, such as problematic usage of social media when compared to their peers prior to the pandemic (Malerba et al., 2022).

In summary, adolescence is a period during which investment yields benefits that extend throughout one's youth, into adulthood, and even benefit future generations (Signorini et al., 2018). The increasing prevalence of mental health conditions in adolescents observed across several European countries requires better provision of adolescent-friendly mental health services that could promote a more seamless transition from child to adult services. Such services should be sensitive and responsive to one's developmental stage and context, in other words, endorsing a youth-centered care, particularly considering the transitive nature of adolescence. The goal is to prevent the worsening of significant gaps and inequalities in mental health care services that affect young people and their future, ultimately hindering the growth of entire communities (Ussai et al., 2022). To reach that goal, wide-ranging and systematic interventions should be funded and should be integrated in the public healthcare system. This should be done on a national level and with long-term vision rather than sporadically in local mental health services. In order to make a shift from fragmented and competing local mental health services to an integrated mental health department structured at the community level, coordination with all the other territorial services should be warranted. This aligns with the national policy, which entails the establishment of community-based mental health departments over the past two decades (Ussai et al., 2022). In this regard, the Italian Minister of Health signed the decree n. 73/2021, that was later converted into Law 106 in July of the



same year, to support local CAHMS authorities, for the provision of prevention and multidisciplinary care for youth and their families, taking into account, in particular, the forms of psychological distress of adolescents resulting from the pandemic (Delibera della Giunta Regionale, 2021).

## **2.2 District Functional Unit for Adolescents**

The legislative decree law, n. 73 of 25 May 2021, converted and modified by law n. 106 of 23 July 2021 ordered for urgent measures to address the health needs related to the COVID-19 pandemic of young people and families (Delibera della Giunta Regionale, 2021). Studies conducted between 2020 – 2021 have shown that adolescents were the first to experience the consequences of containment measures (De France et al., 2022; Ezeoke et al., 2022; Gaslini, 2020; Istituto Superiore di Sanità, 2023), and the prolonged measures over the last two years have had an impact on their psychological well-being with an increase in the frequency, form, and complexity of psychological distress experienced by this population (Petruzzelli et al., 2022). In this context, the Article 33 of Law 106/21 provided 8 M EUR to CAMHS across various regions and autonomous provinces of Italy. This funding aimed to improve these departments by hiring healthcare professionals in self-employment, who can provide multidisciplinary primary, secondary prevention and intervention programmes for adolescents and their families (Gazzetta Ufficiale della Repubblica Italiana, 2021), while abiding by the regulations outlined in Article 7 of Legislative Decree no. 165/2021 and other relevant personnel laws (Gazzetta Ufficiale della Repubblica Italiana, 2021).

The measures outlined in the law were then customized to fit different regions. In this regard, the Veneto Region followed the guidelines set out in the Resolution n. 1215/2021 of the regional council to allocate financial resources for the establishment of the experimental pilot testing phase of the public mental health service for adolescents: “District Functional Unit for Adolescents – (UFDA - Unità Funzionale Distrettuale Adolescenti)”. In particular, in the Veneto region a sum of 2.274.172 EUR is distributed to its’ various LHUs, with 1.622.827 EUR being reserved specifically for recruiting psychologists in nine territorial services that correspond to the health districts of Veneto (Allegato B DGR n.1215/21, 2021).

In the implementation of the UFDA, several measures were taken to guarantee the effective delivery of services. Firstly, to ensure the efficient implementation and management of UFDA, a commission has been established. This commission is responsible for creating collaboration protocols and connections between the various nodes of the territorial network.

To achieve this, the commission employs a variety of strategies, including in-person, online training, and awareness-raising programs. Secondly, a dedicated territorial appointment center (CUP – A) is activated and managed online by educational staff. The activity of the CUP - A is being advertised and disseminated across different media channels to ensure that its' services are widely known and accessible. Thirdly, a specific District Multidimensional Assessment Unit (UVMD-A) is activated to provide complex and transversal interventions for adolescents with high and medium complexity needs. Finally, in order to provide effective care to adolescents, it is crucial to adopt a multi-professional approach that involves not only the patient but also their family, and prioritizes continuity, teamwork, and therapeutic assistance. The UFDA recognizes this and therefore has established a multi-professional team, which includes educators, psychologists, social workers, child neuropsychiatrists, and psychiatrists, all of whom are experts in adolescent care. This team is supported by additional personnel to ensure that care can be provided consistently and without interruption (Allegato A DGR n. 1215/21, 2021).

Furthermore, the UFDA also acknowledges that the needs of adolescents are complex and multifaceted, spanning across medical, psychological, educational, and social domains. Therefore, the organization has adopted a comprehensive and family-based approach to meet these diverse needs. This includes accurate assessments of the individual's situation and the development of consistent therapeutic and assistance projects tailored to the patient's specific needs and social context. Lastly, the service is free of charge and adolescents can contact the service for self-referral. By utilizing these methods, the UFDA is dedicated to reduce barriers to access mental health services and provide the best possible care for adolescents who may not have the financial means to seek private treatment.

The experimental team of UFDA has a set of tasks that are structured in a sequential manner. To begin with, the team implements a low-threshold intervention logic that processes reports from different sources, such as self-referral from the adolescent or the family, experts from other LHU departments, territorial services (schools and social services), and other services that interact with adolescents. All of the referrals must be done by contacting the call-service (CUP-A), which, in order to collect all of the reports from the territory, has been made accessible covering the time slot even when the unit is not active (Allegato A DGR n. 1215/21, 2021).

The age range specified for meeting the inclusion criteria of UFDA is between 12 to 24 years. Furthermore, since the treatment in UFDA has a quality of primary and secondary prevention, taking in charge of patients is dependent upon their distress level. The focus is put primarily on identifying precociously adolescents who are in mild to medium distress caused or exacerbated by the pandemic, with specific attention to social phobia, social withdrawal and socialization problems (the inclusion criteria is summarized in the table 2.1). To make this possible, the team also collaborates with the Territorial School Office to activate a provincial operational group, which provides awareness and information about the activities of UFDA to all schools and ensure collaboration between school psychologists and the UFDA team in the drafting of an intervention. On the other hand, emergency situations and cases of high severity are referred to UVDM-A and are managed in coordination with the Emergency Department, other hospital departments, territorial services, and residential facilities.

**Table 2.1***Admission Criteria as a UFDA User*

| <b>Type of Request</b>  | <b>Yes / No</b>   |
|---|---|
| Adolescents in psychological distress   | Yes   |
| Adolescents who have gone to therapy (in public or private settings) in the past and who are in need again                            | Yes   |
| Adolescents who are currently taking therapy (in public or private settings)  | No  |
| Adolescents with a suicidal risk  | No, referral to UVMD-A  |
| Adolescents living in a community house   | No  |
| Adolescents in a protected discharge from a community house   | Needs evaluation  |
| Adolescents in psychiatric care with a clinical diagnosis and pharmacological therapy   | No  |
| Adolescents in need of a social or psychiatric assessment   | Yes   |
| Adolescents in protected discharge from a hospital  | Needs evaluation  |
| Adolescents with special educational needs or learning disorders who are in psychological distress                                    | Needs evaluation (No school certificates)   |
| Adolescents referred from social services, with a conflictual family background   | Needs evaluation (Yes if they need psychological support, no if the situation is extremely conflicting) |
| Adolescents referred from psychological assistance service of the university who are not resident but have their domicile in the city | Yes   |
| Adolescents referred from psychological assistance service of the university who are not resident nor have their domicile in the city | No  |

*Note.* This table demonstrates the inclusion criteria for UFDA users

When a case is in line with the inclusion criteria, the operator of the CUP-A identifies the territorial area of interest, the equipe of competence, and an available case manager to assign the patient. Even though adolescents can contact the service for self-referral, parental

consent is required for individuals who are under 18 years old to receive assistance. The case manager is responsible for establishing a significant relationship with the patient and their family, and for coordinating professionals, planning and implementing of interventions, and lastly for monitoring of results. Moreover, the case manager works in favor of the social re-integration of the patient, as their tasks take place at the intersection of clinical and social fields.

Consultations follow, with the primary and secondary prevention of psychological disorders being the main focus of all UFDA services. However, the specific programming of interventions and regulations may vary depending on the territorial service. In particular, the current study refers to the UFDA implemented under the Complex Operating Unit for Childhood, Adolescence, Family, and Consultation Services in Padua's LHU (AULSS6). This unit has operating units divided into its districts: Padova Bacchiglione, Piovese, and Terme Colli District; as well as two smaller teams operating in the other two districts of AULSS6 Euganea (Alta Padovana and Padova Sud).

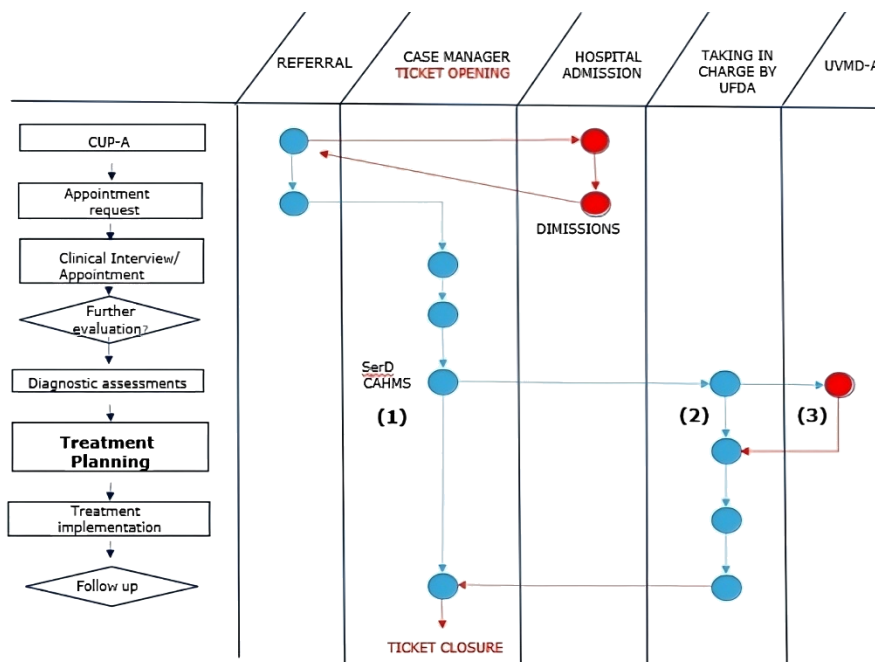
Prior to the initiation of the intervention, a notice on the processing of personal data is given to inform individuals about how the service will handle and process personal data collected during the activities of CUP-A and UFDA, which includes preventive medicine, diagnosis, and multidisciplinary care to promote psychological well-being, particularly considering the psychological distress caused by the COVID-19 pandemic. The notice states that data processing is conducted in accordance with the General Data Protection Regulation (GDPR) and the Privacy Code. The notice also outlines the recipients or categories of recipients to whom the data may be disclosed for operational purposes and that personal data will not be transferred to third parties. Additionally, it highlights the period of data retention, the criteria used for retention, and the rights of data subjects. Data subjects have the right to access, rectify, delete, or limit the processing of their personal data. They also have the right to data portability and the right to withdraw their consent at any time. The notice provides contact information for exercising these rights and indicates that data protection is overseen by a Data Protection Officer appointed by the LHU of Padua (AULSS6).

Subsequently, necessary information is gathered through assessment interviews with the adolescent and, when feasible, with significant others, such as parents and teachers. In certain instances, this integrated assessment model may also serve as an initial intervention. This phase comprises approximately three to four sessions, during which the Strengths and Difficulties Questionnaire (Goodman, 1997) is administered to the patient, and if applicable,

to their parents, for screening purposes. Additionally, the patient is required to complete a brief regional questionnaire, mandated by the Veneto region to provide an overview of service demand. Subsequently, the initial hypothesis for intervention is formulated by the multidisciplinary team, incorporating all relevant personal and contextual data. The initial evaluative phase is concluded with a feedback session with the adolescent, and if necessary, parental involvement, which serves as the foundation for the therapeutic agreement and engagement. Based on the patient and family's consent, one of three intervention paths is activated (summarized in *Figure 1*):

**Figure 1**

*Taking Charge in UFDA: Three Pathways*



*Note:* This graph illustrates the three pathways for patient care within UFDA, categorized numerically based on the clinical severity of cases.

(1) Gradual discharge accompanied by consultations scheduled every three to four weeks for cases of mild distress. This option is chosen when it is determined that the patient has sufficient resources to continue their developmental journey. The distress level is re-assessed during the feedback session with the patient.

(2) Brief focused therapy and continuous intervention by the team for cases of mild to moderate distress. The aim of this intervention is to create a supportive environment that

embraces the adolescents' crisis and reframes distress, taking a preventive approach focused on enhancing their self-efficacy. This brief focused therapy consists of a repeatable cycle of 10 sessions. Follow-up sessions are scheduled every three to four weeks to evaluate treatment effectiveness and identify any potential issues.

(3) Referral of the patient to a secondary-level service, such as UVMD-A or other existing protocols (Addiction Treatment Service - SerD; Territorial Services of CAHMS), for clinical situations characterized by particular severity and complexity. In this scenario, the intervention provides a space for listening and embracing the distress expressed by the adolescent, aiming to support them in their ongoing therapeutic journey with the appropriate service. This referral process is expected to be accompanied (Allegato A DGR n. 1215/21, 2021). The collaboration protocols and connections established between the various nodes of the territorial network and UFDA in the LHU of Padua (AULSS 6) have been crucial factors in making this pathway possible.

In all the cases above, other professionals, such as social workers, educators, and neuropsychiatrists, also play important roles. This holds particularly true for adolescents in social withdrawal. In these cases, a domiciliary intervention is activated aiming to provide a supportive safe space for the adolescent in withdrawal, allowing them to continue their therapeutic journey even when they refuse to leave the house. A dual approach is employed, in which the educator provides domestic assistance, while psychologists continue the intervention at the service involving parents. On the one hand, the involvement of parents serves as an opportunity to effectively reach the withdrawn adolescent, and the success of the intervention relies on building collaboration with parents. In this context, it is important to evaluate variables that may impact the interventions' effectiveness, such as the family's recognition of their adolescents' need for support and the adolescents' ability to express their needs and seek help. On the other hand, establishing a trusting relationship with the adolescent is crucial, with the educator becoming a reliable source of support in their growth. To reach this goal, the educator limits their discussions with parents to essential information for safeguarding their alliance with the adolescent.

The domiciliary intervention is structured through an introductory meeting with the family, followed by a schedule of interventions and monitoring of the project's implementation. The educators' role involves immersing themselves into the daily life of the adolescent and their family, while observing and providing educational support. Among the proposed

activities in the domiciliary intervention, supporting the organization of school activities and using digital tools to facilitate interaction and community outings serve as special opportunities to understand the adolescents' level of integration and social skills. Lastly, collaboration with other entities, particularly the school, is essential for promoting the adolescents' skills and self-esteem, where social workers also play a role. To achieve the latter, UFDA of AULSS6 collaborated with territorial services such as the psychological counseling service of the University of Padua (SAP) and the territorial school office, providing awareness and information about UFDA's activities to schools and ensuring collaboration between school psychologists and teachers for the success of an intervention. Overall, the home intervention aims to create a supportive environment for the adolescent and their family, promoting their growth and well-being while addressing the challenges they face. In cases of severe distress, also neuropsychiatrists intervene to conduct a psychiatric evaluation for possible pharmacological treatment.

In all of the scenarios described above, upon completion of the individualized therapeutic project, a follow-up session is scheduled to evaluate the effectiveness of the treatment. During this session, the patients' well-being is assessed using the follow-up version of the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997), which is administered to both the patient and, when applicable, to their parents. This is particularly important for the monitoring of results of the intervention.

The COVID-19 pandemic has led to a surge in hospitalizations for neuropsychiatric problems among young people in the Veneto Region, with hospitalizations peaking despite the lack of clinical indications, due to a delay in local resources. The UFDA service fits into this context, as it employs a multi-professional team that acts as an interface between health and social-health, providing a specialized, co-managed, and innovative response for a target population that requires comprehensive support accounting for the social context. Hospitalization during developmental age should not only take place in places with adequate structural and organizational characteristics, but also should last the time strictly necessary to facilitate the exit from the emergency-urgency condition of the minor and their family members, while supporting their return to home and possibly safeguarding the continuity of family and social relationships. All of this should be done based on a suitable project of hospital discharge and in connection to the territory of the service system.



From this point of view, therefore, the UFDA serves as a bridge between the hospital, the territorial services of CAMHS, and the domiciliary interventions, which may lead to a reduction in hospitalization rates, relapses, and duration of hospitalization by optimizing resources. Close collaboration is particularly critical for facilitating efficient social and scholastic reintegration of adolescents and safeguarding the continuity of family and social relationships.

The first experimental phase of the service is scheduled to be completed between 2021 and 2023, aiming to improve two key areas. First, there will be organizational improvements that include developing protocols between services and implementing Diagnostic Therapeutic Assistance Paths, which will allow outlining of the best practicable path within health organizations. Second, the project will rely on the European Social Fund Plus and the National Recovery and Resilience Plan funding.

It is imperative to harmonize the provision of mental health services for adolescents at a national level. Such an integrated system should ensure the delivery of a public and cohesive framework for the care and protection of young patients, thereby overcoming any gaps or disruptions in the continuity of care resulting from the transition process. In other words, the fundings are not aimed to reinforce the already existing interventions of the Child Neuropsychiatry Department but to create an innovative unit of Adolescent Neuropsychiatry integrated into the Child and Adolescent Mental Health Services (CAMHS) or so called: “Complex Operating Unit for Childhood, Adolescence, Family, and Consultation Services” composed of a multi-professional team of health professionals. The pilot phase of UFDA fits into this context, where the collection of data is essential for the analysis of epidemiological trends, as well as for the monitoring and evaluation of the service, which can be used for implementing a model that might be further replicated in other health districts. In this regard, UFDA aims to address the unmet needs of adolescents in psychological distress, related to, but not limited to, the COVID-19 pandemic. Implementing such a service will allow adequate responses and lead, in the three-year period 2021-2023, to the completion of an ad hoc service for adolescents.

The following chapter will outline the research procedure, methods, and tools used to evaluate the pilot phase of the UFDA located in Padua’s LHU (AULSS6).



## Chapter 3

### Research

#### 3.1 Introduction

The Covid-19 pandemic has caused an increase in psychological distress among adolescents globally (Meherali et al., 2021; Singh et al., 2020; Qu et al., 2020), as highlighted in the previous chapters. This is further compounded by the already increasing rates of internalizing and externalizing problems (Keyes et al., 2019; Mishina et al., 2018; Parodi et al., 2022; Smith & Rutter, 1995; Steinberg et al., 2015) as well as already reported high levels of loneliness in this population (Beam & Kim, 2020), even before the pandemic (Nyqvist et al., 2016; Williams & Braun, 2019). The literature suggests that the increase in psychological distress in this population, may lead to a surge in mental health disorders in the future (Cohen et al., 2021; De France et al., 2022; Ezeoke et al., 2022; Ussai et al., 2022; Zhou et al., 2020). Italy was one of Europe's first and worst-hit countries during the pandemic, particularly in the first wave, and studies have reported compelling evidence of the psychological sequelae in severely affected countries (Caffo et al., 2020; Mensi et al., 2021; Rossi et al., 2020). Based on the preliminary evidence, there is an urgent need for a responsive and age-sensitive service to address the mental health gaps of young people in the post-COVID era (Costello et al., 2002, 2003; De France et al., 2022). This is particularly pressing since investing in the health of adolescents is crucial as it can benefit them not only during adolescence but also in adulthood and for the next generation (Signorini et al., 2018).

To this end, the Veneto Region has established an Adolescent Neuropsychiatry unit, called as "District Functional Unit for Adolescents" and abbreviated as UFDA, an experimental initiative comprising a team of professionals integrated into the Child and Adolescent Mental Health Services (CAMHS). The UFDA implements Individualized Therapeutic Projects and a youth-centered approach that is accessible and appealing to young people. By providing such a service, the unit aims to address the mental health needs of adolescents in the region of Veneto and possibly serve as a model for other regions or countries facing similar challenges. In this regard, collecting data is crucial for monitoring and evaluating such a service that provides a comprehensive and public system for preventing and caring for mental health in youth (Delibera della Giunta Regionale, 2021). Therefore, the present study aims to explore the data collected in the UFDA located in Padua's LHU, AULSS6.

### **3.2 Objectives and Hypothesis**

The present study aims to assess the appropriateness and effectiveness of UFDA interventions against established standards of practice. This research focuses on three main objectives:

1. Investigating the patient profile seeking help through UFDA by conducting a comprehensive needs analysis. This analysis includes gathering data on age, gender, nationality, school attainment, motives for seeking help, and the impact of the pandemic on various aspects of life, such as changes in healthy habits, relationships with friends and family, feelings of loneliness, self-harming behaviors, and suicidal thoughts. These aspects will be evaluated using a regional questionnaire completed by the adolescents.

2. Evaluating whether UFDA has introduced improvements to the public mental health service for youth in terms of addressing specific patient needs through individualized therapeutic projects, and optimizing the duration of these interventions. This assessment will be based on the information provided in the coordination module by UFDA operators.

3. Assessing the effectiveness of UFDA interventions in terms of improvements in psychological well-being and the long-term sustainability of these improvements. Additionally, the study aims to investigate the agreement between parents and adolescents, utilizing the self and informant reports of the Strengths and Difficulties Questionnaire (SDQ) to evaluate the level of concordance between these two groups.

Regarding the second objective, it is anticipated that the multi-professional and youth-centered approach of UFDA will result in timely intervention initiation and positive outcomes as reported by the operators, even within the constraints of a limited number of psychotherapy sessions. Concerning the third objective, it is expected that these interventions will lead to enhancements in psychological well-being and will be perceived positively by parents, leading to positive changes in SDQ scores for both the youth receiving the services and their parents who complete the informant version of the SDQ. It is crucial to note that these hypotheses are exploratory in nature, aiming to gain a deeper understanding of the effects and outcomes of UFDA interventions rather than confirming preconceived notions.

### 3.3. Method

#### 3.3.1. Participants

Participants were drawn from the initial pool for the study of 425 adolescents (12–24 years), who sought an initial appointment at UFDA in Padua's LHU (AULSS6). Below are the main characteristics of the initial sample (*Table 1*):

**Table 1**

*Characteristics of the Initial Sample*

| Group                    | Age<br>Range | Female participants<br>(N=281) |      | Male participants<br>(N=144) |      |
|--------------------------|--------------|--------------------------------|------|------------------------------|------|
|                          |              | Mean                           | SD   | Mean                         | SD   |
| Under-age<br>Adolescents | 12-17        | 14.75                          | 1.63 | 14.62                        | 1.71 |
| Legal-age<br>Adolescents | 18-24        | 21.10                          | 1.50 | 20.94                        | 1.54 |
| Total<br>Adolescents     | 12-24        | 16.86                          | 3.29 | 16.48                        | 3.19 |

*Note:* This table demonstrates the characteristics of the initial sample for the present study. SD= standard deviation; N= Sample Size

Out of the total 425 subjects, 68 (16%) were not taken in charge by UFDA due to the violation of admission criteria (as shown in *Table 1*). Below (*Table 2*) are presented the specific motives that led to the decision of not taking these subjects in charge.

**Table 2***Motives of Not Taking Subjects in Charge*

| Motives  | N  | Percentage |
|--|----|------------|
| <b>Currently taking therapy (in public or private settings)</b>                                    | 15 | 22.06%.    |
| <b>Adolescents in psychiatric care</b>   | 15 | 22.06%.    |
| <b>Adolescents with special educational needs or learning disorders (seeking for certificates)</b> | 12 | 17.65%     |
| <b>Adolescents referred from social services, with an extremely conflicting family background</b>  | 7  | 10.29%     |
| <b>Adolescent refusing intervention</b>  | 10 | 14.71%     |
| <b>Age criteria</b>  | 2  | 2.94%      |
| <b>Not resident</b>  | 3  | 4.41%      |
| <b>No parental consent</b>   | 4  | 5.88%      |

*Note.* This table shows the motives for non-admission to UFDA of 68 subjects. N= Absolute frequency

Out of the initial pool of 357 subjects, a total of 255 adolescents participated in the study, representing approximately 71.43% of the patients admitted to UFDA. Among the 357 subjects, 84 did not complete the questionnaire validly, and there are 18 missing questionnaires that have not been registered in the relevant portal.

The mean age of the sample is 17 years, with a standard deviation of 3.32. Out of the total participants, 112 adolescents were older than 18 years (legal-age adolescents), while 143 adolescents were younger than 18 years (under-age adolescents). Among the under-age adolescents, the mean age is 14 years, with a standard deviation of 1.56, whereas among the legal-age adolescents, the mean age is 20 years, with a standard deviation of 1.87. To examine the potential impact of age and gender on the two groups, a Pearson's chi-squared test was conducted. The analysis revealed no significant difference in age distribution between the groups ( $\chi^2(1) = 3.7686$ ,  $p\text{-value} = 0.05222$ ), suggesting similar age compositions. However, a significant difference in gender distribution was observed ( $\chi^2(1) = 46.592$ ,  $p < 0.001$ ), indicating an imbalanced representation of genders in our sample. Specifically, females were found to be the majority in both age groups. It is noteworthy that the gender imbalance remained consistent across different age groups, as confirmed by Pearson's chi-squared test ( $\chi^2(13) = 12.313$ ,  $p\text{-value} = 0.5023$ ). This indicates that the uneven gender distribution was not

influenced by age group differences, highlighting a stable pattern throughout the sample. Below are the main characteristics of participants (*Table 3*).

**Table 3**

*Sample characteristics of the present study*

| Group                            | Age<br>Range | Female participants<br>(N=182) |      | Male participants<br>(N=73) |      |
|----------------------------------|--------------|--------------------------------|------|-----------------------------|------|
|                                  |              | Mean                           | SD   | Mean                        | SD   |
| <b>Under-age<br/>Adolescents</b> | 12-17        | 14.89                          | 1.65 | 14.82                       | 1.46 |
| <b>Legal-age<br/>Adolescents</b> | 18-24        | 20.60                          | 1.83 | 20.63                       | 1.99 |
| <b>Total<br/>Adolescents</b>     | 12-24        | 17.37                          | 3.32 | 17.45                       | 3.37 |

*Note.* This table demonstrates the characteristics of the sample for the present study. SD= standard deviation; N=Sample size.

Additionally, there is a separate group for parents or caregivers who completed the informant version of SDQ. Out of the 255 adolescents, 113 subjects (44.3% of the sample) had at least one parent who completed the initial SDQ, with a total of 170 informant versions of the SDQ completed in our study. Please refer to *Table 4* for sample characteristics. Regarding the breakdown by age of the legal-age adolescents, 106 mothers and 64 fathers completed the questionnaire. Below are the distributions of parental participation (*Table 4*).

**Table 4**

*Parental Participation by Category*

|  | Male   |        | Female |        | Total |
|--|--------|--------|--------|--------|-------|
|  | Mother | Father | Mother | Father |       |
| <b>Under-age<br/>Adolescents Reports</b> | 30     | 17     | 56     | 38     | 141   |
| <b>Legal-age<br/>Adolescents Reports</b> | 5      | 1      | 15     | 8      | 29    |

|       |    |    |    |    |     |
|-------|----|----|----|----|-----|
| Total | 35 | 18 | 71 | 46 | 170 |
|-------|----|----|----|----|-----|

*Note.* This table demonstrates the frequency N of parental participation by category.

### 3.3.2 Measures

#### 3.3.2.1 Regional Questionnaire

A regional questionnaire, mandated by the Veneto region to assess service demand, was utilized in the study. The questionnaire consisted of multiple-choice questions designed to gather pertinent information from the participants. The questions included in the questionnaire covered various aspects, such as demographic information (age, gender, nationality), educational background/occupation, COVID-19 status, difficulties experienced in predefined categories, impact of difficulties on daily life, digital device usage, thoughts of self-harm or suicide, feelings of loneliness and reduced social contact, perception of familial relationships, substance use during the pandemic, level of physical activity, dietary habits, changes in emotional relationships, and involvement in specific risky cyber behaviors. The questionnaire was thoughtfully constructed to obtain a comprehensive understanding of the participants' experiences and to provide valuable insights for the research investigation. By employing this regional questionnaire, the study aimed to capture essential information related to service demand and the patient profile, contributing to the overall research objectives of the thesis.

#### 3.3.2.2 The Coordination Module

The coordination module was utilized by the operators of UFDA to gather important patient information throughout the course and by the end of treatment. It includes variables such as the type of referral, motive for seeking help, duration of distress, type of intervention based on the severity of distress, the number of sessions attended and the result of the intervention. The module serves as a valuable tool for the operators of UFDA to capture essential data, enabling a comprehensive understanding of patients' backgrounds and treatment progress. The collected data from the module provides insights into the effectiveness of psychological interventions from the operators' point of view and contributes to the analysis of treatment outcomes in combination with follow-up questionnaire results.

#### 3.3.2.3 Strengths and Difficulties Questionnaire (Goodman, 1997)

The UFDA implemented the Italian version of Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) as the outcome measure of interventions. The SDQ has been validated in several studies from various countries, and is widely used for screening purposes and as an



outcome measure in mental health care and research (Brann et al., 2018a). It is a cost-effective and time-saving instrument as it involves both self-report and informant versions, and contains only 25 items whilst having good psychometric properties (Li et al., 2017; Tobia & Marzocchi, 2018). The questionnaire is designed to assess emotional and behavioural problems in children and adolescents aged 3 to 25 years through the assessment of strengths and difficulties across four problem scales: (a) Emotional Symptoms, (b) Conduct Problems, (c) Hyperactivity/Inattention, and (d) Peer Relationship Problems, and one strength scale of Prosocial Behavior.

Each item is rated on a three-point Likert-type response scale: “not true”, “somewhat true” or “certainly true” on the basis of how things have been over the last six months. “Somewhat true is always scored 1, whereas “not true” and “certainly true” are scored either 0 or 2 depending on the wording of the item. Each subscale consists of 5 items and generates a score ranging from 0 to 10. An internalising score (range= 0–20) is obtained by the sum of the two subscales of Emotional Symptoms and Peer Relationship Problems, and an externalising score (range= 0–20) is given by the sum of the two subscales of Conduct Problems and Hyperactivity/Inattention. All four problem subscales add up to generate a total difficulties score ranging from 0 to 40. Higher scores on the four difficulties scales and the total difficulties score reflect more serious problems, whereas higher scores on the Prosocial Behavior scale denote better prosocial behavior. The scoring procedures are available online ([www.sdqinfo.org](http://www.sdqinfo.org)).

In the present study, both self-rated version (SDQ) and informant-rated version (SDQ-P) were used to assess the difficulties and strengths of the adolescent both from their and their parents’ perspective. The parent/caregiver answers the same items as on the self-report version and provides additional valuable information. Furthermore, follow-up versions of SDQ are used at discharge in order to evaluate the changes in strengths and difficulties following intervention.

### **3.3.3. Procedure**

Access to UFDA requires scheduling an appointment through the dedicated call service, CUP-A, which is widely promoted through various media channels. UFDA also collaborates with the Territorial School Office to establish a provincial operational group which raises awareness about UFDA activities among schools, fostering collaboration between school psychologists and UFDA in intervention development.

The inclusion criteria are based on age and distress level. First, only patients between 12 – 24 years old are taken in charge. Second, the treatment approach in UFDA primarily emphasizes primary and secondary prevention. As a result, the main focus is on identifying adolescents experiencing mild to moderate distress, caused or exacerbated by the pandemic, with specific attention given to issues such as social phobia, social withdrawal and difficulties in socialization.

Patients not meeting the age-related criteria are referred to CAMHS or AMHS, while cases of high severity requiring specialized interventions beyond UFDA's scope are referred through coordinated processes. In this regard, collaboration protocols and connections between UFDA and the territorial network in the LHM of Padua (AULSS6) play a crucial role in ensuring comprehensive care for adolescents. UFDA can seamlessly refer these cases to other services within the territorial network, such as UVMD-A or other competent services like SerD or territorial CAMHS. This collaborative approach allows for the appropriate allocation of patients to the most suitable and specialized care settings, ensuring that those with higher severity receive the necessary treatment and support from the relevant mental health service.

When a referral aligns with the inclusion criteria, the CUP-A operator identifies the relevant territorial area, the competent team of professionals, and an available case manager. The case manager initiates the assessment phase, usually consisting of three to four sessions. Assessment interviews are conducted with the patient and, if possible, significant others like parents and teachers. At the beginning of the first session, the clinician provides individuals with a notice on personal data processing, offering the SDQ (Goodman, 1997) to the patient and their parents for completion, alongside a brief regional questionnaire, mandated by the Veneto region to gather an overview of service demand. If this is not possible the self-report and informant versions are mailed to patients after the first appointment. The clinician is subsequently responsible for collecting and organizing data entry. In accordance with national protocols in public mental health, completion of the SDQ is voluntary and there is no routine follow up of missing data.

The assessment phase concludes with a feedback session involving the adolescent and, if necessary, their parents / caregivers. This session serves as the basis for establishing the therapeutic agreement and engagement. With the patient and family's consent, one of three intervention paths is initiated: (a) slow discharge with consultations every three to four weeks for slight distress, (b) brief focused therapy with around ten repeatable psychotherapy sessions

for mild to moderate psychological distress, or (c) referral to a second-level service for clinical situations of high severity/complexity (such as UVMD-A or other collaborative protocols). Only patients in the first two pathways (a and b) are included in the study. Following the completion of the individualized therapeutic project, a follow-up session is scheduled to assess treatment outcomes. The patients' well-being is evaluated using the follow-up version of the SDQ (Goodman, 1997) administered to both the patient and, if applicable, to their parents / caregivers.

### **3.3.4 Ethics Approval**

The present study is conducted in compliance with the ethical standards for research described in the Ethical Principles of Psychologists and Code of Conduct (American Psychological Association, 2010), as well as of the Code of Conduct adopted by Azienda Ulss 6 Euganea. The Code of Conduct is based on the D.P.R. n. 62 of April 16, 2013, 'Regulation containing the code of conduct for public employees, in accordance with Article 54 of Legislative Decree no. 165 of March 30, 2001,' whose contents constitute the general principles of the Code (D.P.R. n. 62 of April 16, 2013). The ethical standards and codes of conduct ensure the quality of services and principles of loyalty of public employees as well as the good performance and welfare of those with whom they interact (Legislative Decree No. 165 of March 30, 2001, Art. 54, 2001).

### **3.3.5 Data Analyses**

The collected data underwent statistical analysis using Rstudio for Windows (version R 4.0.3). Descriptive statistics encompassed calculations of percentages, absolute, relative and cumulative frequencies; measures of central tendency, such as quartiles, median, and mean, were utilized to explore the distribution of the data, along with measures of dispersion, including interquartile range, standard deviation, skewness, and kurtosis, to assess the data's variability and shape.

To investigate the equal distribution of age and gender in the sample, Pearson's Chi-Squared test was performed, enabling an examination of potential associations and ensuring representative sampling.

The comparison of the under-aged sample to established norms was conducted using the One-Sample T-Test, provided that the Shapiro-Wilk Test did not yield a significant p-value and the Bartlett's Test of equality of variance was satisfied. However, when these assumptions

were violated, the Wilcoxon Signed Rank Test was employed, with a stratified analysis based on gender, in accordance with established norms. Additionally, a comprehensive two-way Analysis of Variance (ANOVA) was employed to assess the interaction of age and gender factors. Notably, due to significant deviations from normal distribution as indicated by the Shapiro-Wilk test, the individual factor effects were controlled using the Kruskal-Wallis One Way Analysis of Variance test, for assuring more robust results.

Owing to the significant p-values yielded by the Shapiro-Wilk test, to compare self-report and informant-report data, the Wilcoxon Signed Rank test was applied, facilitating a thorough investigation of potential differences between the two perspectives. Additionally, robust correlation analysis using Spearman's Rho Correlation Coefficient was conducted to identify any meaningful associations between self-report and informant-report data. Stratification based on gender and age was not pursued, given the constraints imposed by the sample size.

In the pre- and follow-up analysis of self-report and informant-report data of SDQ, the Wilcoxon Signed Rank test was used for the entire sample, irrespective of gender and age, to identify any significant changes over time. Moreover, a concordance analysis using the Wilcoxon Signed Rank test and correlation analysis with Spearman's Rho Correlation Coefficient were performed, offering valuable insights into the associations between self-report and informant-report data after the intervention at UFDA.

## Chapter 4:

### The Results

This chapter presents the findings of the study which aimed to investigate the sample arrived to UFDA and the effectiveness of this new system for the intervention program in reducing overall difficulties and improving the psychological well-being of adolescents.

#### 4.1. The Regional Questionnaire

Of the total sample size of 255 subjects, 239 individuals completed the regional questionnaire, resulting in a participation rate of 93.72%. Among the respondents, there were 172 females, accounting for 71.96% of the sample, and 67 males, representing 28.03% of the sample. The characteristics of the respondents are summarized in *Table 5* below.

**Table 5**

*The sample characteristics of the respondents to the regional questionnaire (N = 239)*

| Italians      |         |         |         |         |        |
|---------------|---------|---------|---------|---------|--------|
| Age range     | 12 - 14 | 15 - 17 | 18 - 21 | 22 - 24 | Total  |
| <b>Female</b> | 20.92%  | 23.85%  | 16.31%  | 7.11%   | 68.20% |
| <b>Male</b>   | 7.11%   | 7.95%   | 6.69%   | 4.18%   | 25.94% |
| <b>Total</b>  | 28.03%  | 31.8%   | 23%     | 11.29%  | 94.14% |
| Others        |         |         |         |         |        |
| Age range     | 12 - 14 | 15 - 17 | 18 - 21 | 22 - 24 | Total  |
| <b>Female</b> | 0.83%   | 1.67%   | 0.41%   | 0.83%   | 3.76%  |
| <b>Male</b>   | 1.25%   | 0.83%   | 0.00%   | 0.00%   | 2.09%  |
| <b>Total</b>  | 2.08%   | 2.5%    | 0.41%   | 0.83%   | 5.85%  |

*Note:* This table demonstrates the proportion of gender, nationality and age range of the respondents.

- Educational Attainment

The distribution of participants across different categories of educational status revealed notable variations. Significantly, nearly half of the participants (48.54%) were enrolled in high school, while approximately one-fifth (21.34%) belonged to the middle school category. A smaller proportion, around 17%, consisted of college students, while slightly above 5% were employed individuals. Finally, less than 5% of the participants were identified as school drop-outs or unemployed individuals.

- Experienced Difficulties

*Table 6* displays the frequency distribution of reported areas of difficulties among the 139 subjects. The results indicate that the majority of patients identified emotions as their primary area of difficulty; mood-related challenges ranked second; family-related concerns ranked third, followed by school-related difficulties. Areas related to friendships, interpersonal harmony, and behaviors were reported by approximately 10% of the participants each. Additionally, the minority of the sample reported experiencing challenges with authority figures, while a small proportion reported no difficulties in any of the assessed areas. These findings shed light on the specific domains in which individuals are experiencing the most significant distress.

Participants had the option to select multiple areas of difficulty. For the distribution of responses please refer to *Table 7*.

**Table 6**

*Area of Difficulty: Response Frequency*

| <b>Area of Difficulty</b>        | <b>N</b> | <b>Relative Frequency</b> | <b>Percentage</b> |
|----------------------------------|----------|---------------------------|-------------------|
| <b>Friendships</b>               | 86       | 0.100                     | 10.03%            |
| <b>Interpersonal<br/>Harmony</b> | 87       | 0.101                     | 10.15%            |
| <b>Behaviors</b>                 | 92       | 0.107                     | 10.73%            |
| <b>Emotions</b>                  | 186      | 0.217                     | 21.7%             |
| <b>Family</b>                    | 125      | 0.145                     | 14.58%            |
| <b>School</b>                    | 107      | 0.124                     | 12.48%            |
| <b>Mood</b>                      | 164      | 0.191                     | 19.13%            |
| <b>Authority</b>                 | 6        | 0.007                     |                   |

|                      |   |       |       |
|----------------------|---|-------|-------|
|                      |   |       | 0.07% |
| <b>No difficulty</b> | 4 | 0.004 | 0.04% |

*Note:* The table presents the absolute and relative frequency, as well as the percentage of responses per area of difficulty. N= Absolute frequency.

**Table 7**

*Multiple Difficulties: Percentage Report*

| <b>Number of</b>   | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> |
|--------------------|----------|----------|----------|----------|----------|----------|----------|
| <b>Difficulty</b>  |          |          |          |          |          |          |          |
| <b>% of</b>        | 12.55%   | 14.64%   | 23.85%   | 16.74%   | 20.50%   | 6.28%    | 5.44%    |
| <b>Respondents</b> |          |          |          |          |          |          |          |

*Note:* This refers to the percentage of individuals who reported experiencing more than one difficulty.

- Life Quality, Internet Usage and Intrusive Thoughts of Self-harm or Suicide

Here the percentage of respondents who selected “Yes” or “No” for the questions of: 1) Have these difficulties worsened your daily life? 2) In the last 6 months, have you ever thought about wanting to die or hurt yourself? 3) In the past year, have you used digital devices (smartphone, tablet, PC) more than you would have expected (excluding school/work-related purposes)? Among the 239 participants included in the study, a majority of 203 individuals (85%) reported a deterioration in their life quality since the onset of the pandemic. Conversely, 36 participants (15%) stated that their life quality had not worsened.

In terms of internet usage, a significant proportion of 158 participants (66%) acknowledged excessive use of the internet. However, 81 participants (34%) reported not experiencing this issue.

Regarding mental health, 148 participants (62%) disclosed experiencing intrusive thoughts related to self-harm or suicide. On the other hand, 91 participants (38%) did not report such thoughts.

- Cyberbullying, Cybersex Rates

In relation to cyber-bullying and cyber-sex behaviors, *Table 8* displays the absolute and relative frequencies, along with the corresponding percentages of the responses. Notably, the findings reveal that the majority of participants reported no involvement in either of these behaviors.

**Table 8***Cyberbullying, Cyber-sex Behavior Rates During the Pandemic*

| Ever been involved in | N   | Relative frequency | Percentage |
|-----------------------|-----|--------------------|------------|
| <b>Cyberbullying</b>  | 18  | 0.08               | 7.53%      |
| <b>Cybersex</b>       | 8   | 0.03               | 3.35%      |
| <b>Neither</b>        | 212 | 0.88               | 88.40%     |
| <b>Both</b>           | 1   | 0.00               | 0.42%      |

*Note:* Table 8 displays the frequency distribution and percentages of responses related to cyberbullying and cyber-sex behaviors. N= Absolute frequency.

- Substance Use

The answer rates to the question: “Have you started/increased the use of substances (cigarettes, alcohol, other substances) during the pandemic?” are reported down below in the Table 9. Particularly, more than the half of the subjects reported they haven’t started nor increased their use of substances, while around half of the sample reported that they started or increased using different substances during the pandemic. Most of them reported only one substance while around one fifth of them reported more than one substance (Table 10).

**Table 9***Substance Use: YES Response Frequency*

| Substances | Alcohol | Energy drinks | Coffee | Sigarettes | Other substances | Nothing |
|------------|---------|---------------|--------|------------|------------------|---------|
| N          | 20      | 37            | 37     | 36         | 11               | 172     |
| %          | 6.38%   | 11.82%        | 11.82% | 11.50%     | 3.51%            | 54.95%  |

*Note:* The table presents the count and percentage of responses per substance use. N= Absolute frequency.

**Table 10***Multiple Substances: Percentage Report*

| Number of Substances | 0     | 1      | 2      | 3     | 4     | 5     |
|----------------------|-------|--------|--------|-------|-------|-------|
| % of respondents     | 0.42% | 80.33% | 10.46% | 7.11% | 0.42% | 1.26% |



*Note:* This refers to the percentage of individuals who reported having started / increased using one or more substance.

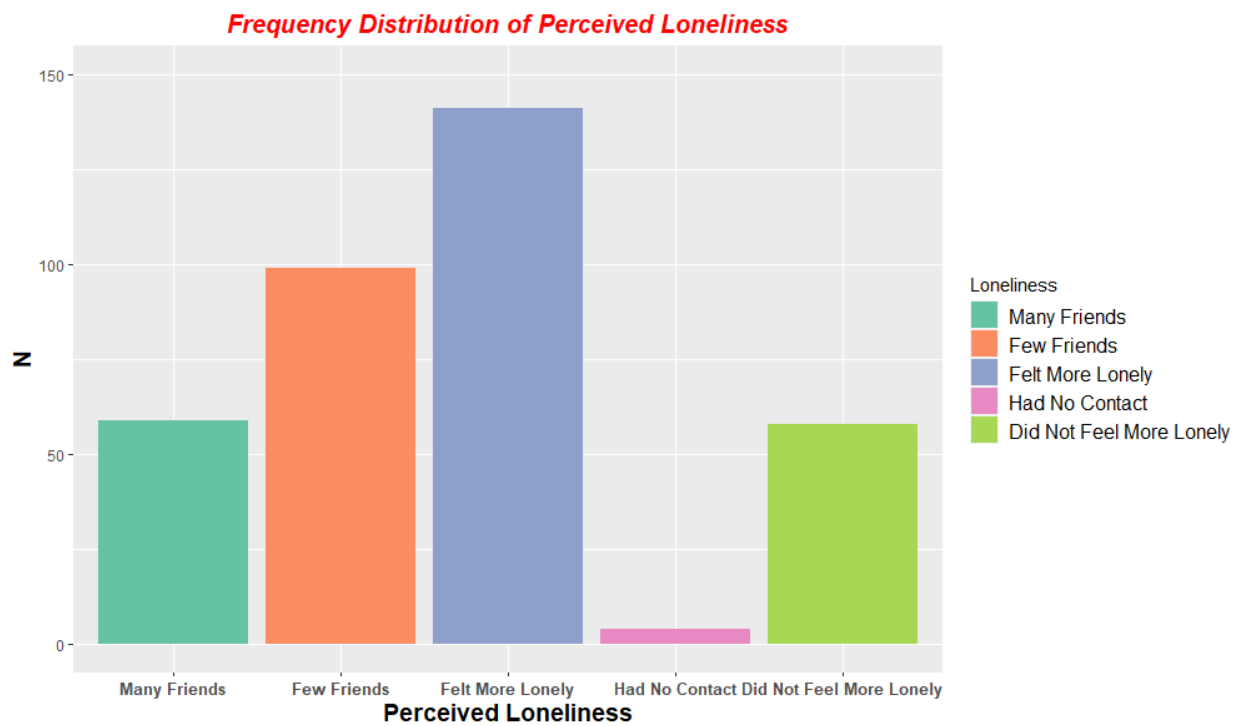
- Perception of Loneliness and Contact with Friends

The frequency report pertaining to the multiple-choice question "In the past six months, have you felt more lonely than usual and/or had less contact with friends?" is presented in *Figure 2*.

The data analysis reveals that 49% of the participants exclusively selected one option, whereas 51% chose two options. Notably, a significant proportion of the subjects, approximately one quarter (25%), reported an increase in feelings of loneliness during the past six months. Furthermore, more than 17% of the respondents reported a reduction in contact to only a few friends, compared to their usual level of interaction. It is worth noting that approximately 0.71% of individuals indicated having no contact whatsoever. These findings shed light on the prevailing prevalence of loneliness and decreased social contact within the examined sample. However, it is noteworthy that around 10% of respondents reported not experiencing any sense of loneliness or decrease in contact, indicating that they either maintained their usual levels of social connectedness or did not perceive an increase in feelings of loneliness.

Similarly, to the question: "Have your emotional relationships changed in the past year?" the frequency report is presented in *Table 11*.

**Figure 2**



**Table 11**

*Changes in Emotional Relationships over the Past Year*

| Relationships    | N  | Relative frequency | Percentage |
|------------------|----|--------------------|------------|
| <b>Improved</b>  | 56 | 0.23               | 23.43%     |
| <b>Worsened</b>  | 90 | 0.38               | 37.66%     |
| <b>Unchanged</b> | 93 | 0.39               | 38.91%     |

*Note:* N= Absolute frequency.

- Perceptions of Family Dynamics

To the question: “How do you feel within your family?” the majority (38%) of the subjects reported that their relationship with family members were positive, even though this proportion didn’t reach even the half of the sample. On the other hand, around 26% reported negative family dynamics, while less than 35% reported that it was neither positive nor negative.

- Nutrition and Exercise

To the question: “In the past year, how would you describe your diet?” around 13% of the subjects reported it decreased in quantity. Similarly, around 18% reported that it remained the

same. Only approximately 8% reported they ate more and healthier food, while 9% reported eating more junk food and snacks.

Additionally, the frequency report for the question "During the pandemic, how would you describe your physical activity?" reveals that nearly half of the subjects (47%) experienced a decrease in their physical activity. In contrast, approximately 21% of the participants reported an increase in their physical activity levels. Furthermore, around 32% of the sample indicated that their physical activity remained unchanged during the pandemic.

## 4.2 Psychological Assessment and Referral Profile in the Coordination Module: An Overview of Patient Information

The following descriptive analysis focuses on a sample of 255 participants included in the study. For a more comprehensive view of the sample characteristics, please refer to *Table 12*. This analysis presents a summary of key findings and statistical measures concerning the type of referral, motives for seeking help, duration of distress, type of intervention based on the severity of distress, number of attended sessions, and intervention outcomes.

By examining the distribution and summary statistics of these variables, we gain a better understanding of the sample and its characteristics. Furthermore, this analysis enables us to explore whether UFDA, through personalized interventions with a limited number of sessions, has yielded positive outcomes as predicted.

**Table 12**

*Sample Characteristics of the Present Study*

|                              | Male | Female | Total |
|------------------------------|------|--------|-------|
| <b>Under-age Adolescents</b> | 40   | 103    | 143   |
| <b>Legal-age Adolescents</b> | 33   | 79     | 112   |
| Total                        | 73   | 182    | 255   |

- The Type of Referral

*Table 13* presents the absolute and relative frequency, as well as percentage distribution of different types of referrals to the UFDA service. Notably, nearly half of the referrals originated

from parents, while the other half approximately were made by other hospital departments, self-referrals and from territorial services, including schools and social service agencies.

**Table 13**

*Distribution of Type of Referrals to the UFDA Service by Source*

| Type of Referral               | N   | Relative Frequency | Percentage |
|--------------------------------|-----|--------------------|------------|
| <b>Self-referral</b>           | 57  | 0.22               | 22.35%     |
| <b>Other Hospital</b>          | 75  | 0.29               | 29.41%     |
| <b>Departments</b>             |     |                    |            |
| <b>Parent</b>                  | 117 | 0.46               | 45.88%     |
| <b>Social Service Agencies</b> | 4   | 0.02               | 1.57%      |
| <b>Territory</b>               | 2   | 0.01               | 0.78%      |

*Note:* Table 18 presents the distribution of referrals to the UFDA service by source. N= Absolute frequency.

- The Motive for Seeking Assistance in UFDA

*Table 14* displays the distribution of motives for seeking assistance among the participants. Notably, nearly 30% of the sample expressed concerns related to anxiety or panic. Identity problems were also prevalent, reported by over one-fifth of the participants. Relationship problems and social withdrawal were reported by approximately 14% of the sample. Conversely, the incidence of eating disorders and self-harming behaviors was relatively lower, accounting for less than 5% collectively, similar to the prevalence of grief within the sample.

**Table 14**

*Motives for Seeking Assistance: Absolute, Relative Frequencies, and Percentages*

|                              | N  | Relative Frequency | Percentage |
|------------------------------|----|--------------------|------------|
| <b>Anxiety / Panic</b>       | 75 | 0.29               | 29.41%     |
| <b>Self-harming behavior</b> | 6  | 0.02               | 2.35%      |
| <b>Grief</b>                 | 13 | 0.05               | 5.10%      |
| <b>Eating Disorders</b>      | 5  | 0.02               | 1.96%      |
| <b>Family Problems</b>       | 29 | 0.11               | 11.37%     |
| <b>Individual Problems</b>   | 56 | 0.22               | 21.96%     |

|                              |    |      |        |
|------------------------------|----|------|--------|
| <b>Relationship Problems</b> | 38 | 0.15 | 14.9%  |
| <b>Social and School</b>     | 33 | 0.13 | 12.94% |
| <b>Withdrawal</b>            |    |      |        |

Note: N= Absolute frequency

- Duration of distress

In *Table 15*, the duration of distress reported by patients seeking help at UFDA is presented. Nearly half of the patients experienced distress for a few months, suggesting a significant proportion of individuals seeking assistance faced relatively short-term challenges. Following this, the second most prevalent distress duration reported by patients was one year, indicating a notable number of individuals experiencing distress for a more extended period. Additionally, approximately 20% of patients reported distress durations either shorter or longer than a year, signifying a relatively balanced distribution of distress durations in this range. Furthermore, the data reveals that approximately 10% of patients reported experiencing distress for even longer durations, implying a subset of individuals facing more prolonged and persistent challenges. It is essential to emphasize that for this particular variable, there were only 182 reports out of 255, indicating that the data on the duration of distress remains unknown for some patients. This incomplete data subset may potentially introduce bias and limit the comprehensive understanding of distress patterns among all patients at UFDA. As such, any conclusions drawn from the available data should be approached with caution and awareness of this limitation.

**Table 15**

*Duration of distress*

| Duration of distress       | N  | Relative Frequency | Percentage |
|----------------------------|----|--------------------|------------|
| <b>A Few Months</b>        | 82 | 0.45               | 45.05%     |
| <b>Less than a year</b>    | 19 | 0.10               | 10.43%     |
| <b>A year</b>              | 45 | 0.24               | 24.72%     |
| <b>More than a year</b>    | 18 | 0.09               | 9.87%      |
| <b>Two years</b>           | 7  | 0.03               | 3.84%      |
| <b>More than two years</b> | 11 | 0.06               | 6.04%      |

Note: N= Absolute frequency.

- The Type of Intervention

The type of intervention is meticulously tailored based on the severity of each case. It entails a higher level of professional involvement and involves repeated cycles of psychotherapies. In cases where necessary, patients may be referred to a more specialized and appropriate service. As indicated in *Table 16*, half of the patients presented with slight severity, while the approximately the remaining half exhibited problematic severity. Furthermore, there was a relatively low prevalence of severe cases, as these individuals are typically referred to more specialized services in accordance with the established inclusion criteria. It is of utmost importance to underscore that only 217 out of the total 255 reports were available, indicating that data related to the type of intervention remains undisclosed for some patients. As a result, any interpretations or conclusions drawn from the available data should be approached cautiously, taking into full consideration the awareness of this limitation.

**Table 16**

*Type of Intervention Distribution Based on the Severity of Case*

| Type of Intervention | N   | Relative Frequency | Percentage |
|----------------------|-----|--------------------|------------|
| <b>Slight</b>        | 107 | 0.50               | 50%        |
| <b>Problematic</b>   | 94  | 0.43               | 43%        |
| <b>Severe</b>        | 16  | 0.07               | 7%         |

*Note:* N= Absolute frequency.

- **Intervention Duration and Outcome**

The study presents the descriptive statistics of psychotherapy sessions conducted with adolescents and parents, which are displayed in *Table 17* and *Table 18*, respectively. The brief focused therapy program consists of a repeatable cycle of 10 sessions in UFDA.

For adolescents, the number of interview sessions ranges from a minimum of one to a maximum of 18. It is important to note that 18 sessions fall short of completing two full cycles of psychotherapy. On the other hand, parents' interview counts show relatively lower figures, with a minimum of 1 session and a maximum of 7 sessions. Moreover, it is worth mentioning that there are some instances of missing data. Specifically, there are 46 missing data points for adolescents' interview counts and 58 missing data points for parents' interview counts.

**Table 17**

*Summary of Interview Counts with Adolescents*

| <b>Min</b> | <b>Max</b> | <b>1Q</b> | <b>3Q</b> | <b>Mdn</b> | <b>Mean</b> | <b>SD</b> | <b>NA's</b> |
|------------|------------|-----------|-----------|------------|-------------|-----------|-------------|
| 1          | 18         | 6.75      | 14.25     | 12         | 10.84       | 4.95      | 46          |

*Note:* Min= minimum amount; 1Q= first quartile; Mdn= Median; 3Q= third quartile

**Table 18**

*Summary of Interview Counts with Parents*

| <b>Min</b> | <b>Max</b> | <b>1Q</b> | <b>3Q</b> | <b>Mdn</b> | <b>Mean</b> | <b>SD</b> | <b>NA's</b> |
|------------|------------|-----------|-----------|------------|-------------|-----------|-------------|
| 1          | 7          | 1         | 3         | 2          | 2.138       | 1.19      | 58          |

*Note:* Min= minimum amount; 1Q= first quartile; Mdn= Median; 3Q= third quartile

The intervention outcome data is presented in *Table 19* and in *Figure 3*. The majority of cases, accounting for more than half of the sample, have been concluded. Approximately one fifth of the participants voluntarily interrupted the intervention, dropping out of the service, while less than 30% were either sent or temporarily suspended due to a temporary suspension of UFDA and are awaiting re-engagement. It is important to highlight that out of the total 255 patients, only 225 reports are available for this particular variable, indicating some missing data for the analysis.

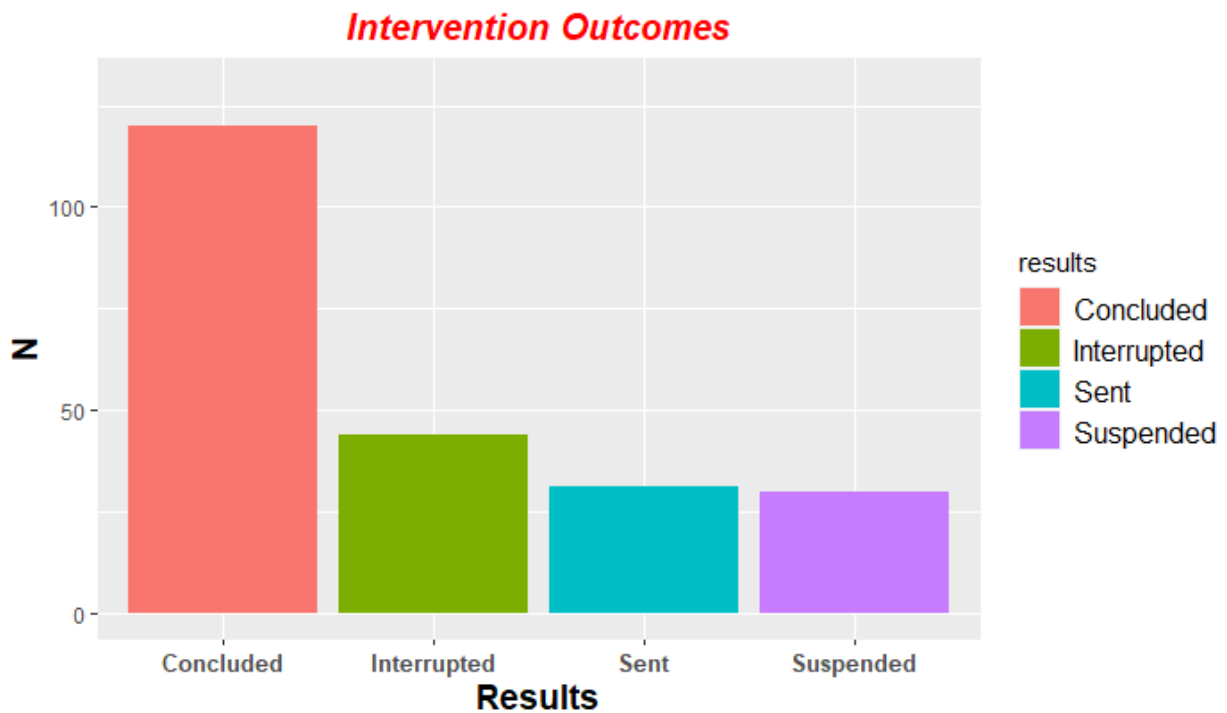
**Table 19**

*The Intervention Outcome*

|                    | <b>N</b> | <b>Relative Frequency</b> | <b>Percentage</b> |
|--------------------|----------|---------------------------|-------------------|
| <b>Concluded</b>   | 120      | 0.53                      | 53%               |
| <b>Interrupted</b> | 44       | 0.19                      | 19%               |
| <b>Sent</b>        | 31       | 0.13                      | 13%               |
| <b>Suspended</b>   | 30       | 0.13                      | 13%               |

*Note:* N= Absolute frequency

Figure 3



## 4.2 Strengths and Difficulties Questionnaire (SDQ)

The upcoming section presents the findings of a comparative analysis between the samples' scores and the established Italian norms, using the SDQ developed by Goodman (1997). The analysis utilized normative data from the "Look@Me" project, which involved over two thousand adolescents aged 12 to 17 who completed the self-report version of the SDQ. It is important to note that the results of the Look@Me project are currently unavailable to the public, as they have not been published yet.

For this analysis, data from 255 adolescents were available (See *Table 12*).

### 4.2.1 A Comparative Analysis of Pre-Scores on the Strengths and Difficulties Questionnaire (SDQ) between Under-Age Male Adolescents and Normative Data



**Table 20***Frequency and Percentage Analysis of SDQ Scale Scores*

| Score | Emotional Symptoms Scale |       | Conduct Problems Scale |       | Hyperactivity / Inattention Scale |       | Peer Relationship Problems Scale |      | Prosocial Behavior Scale |       | Impact Score |      |
|-------|--------------------------|-------|------------------------|-------|-----------------------------------|-------|----------------------------------|------|--------------------------|-------|--------------|------|
|       | N                        | %     | N                      | %     | N                                 | %     | N                                | %    | N                        | %     | N            | %    |
|       | 0                        | 1     | 2.5%                   | 3     | 7.5%                              | 1     | 2.5%                             | 5    | 12.5%                    | 0     | 0%           | 12   |
| 1     | 4                        | 10%   | 8                      | 20%   | 1                                 | 2.5%  | 6                                | 15%  | 0                        | 0%    | 4            | 10%  |
| 2     | 8                        | 20%   | 8                      | 20%   | 2                                 | 5.0%  | 8                                | 20%  | 0                        | 0%    | 8            | 20%  |
| 3     | 5                        | 12.5% | 4                      | 10%   | 3                                 | 7.5%  | 6                                | 15%  | 2                        | 5%    | 6            | 15%  |
| 4     | 3                        | 7.5%  | 6                      | 15%   | 11                                | 27.5% | 3                                | 7.5% | 2                        | 5%    | 3            | 7.5% |
| 5     | 6                        | 15%   | 5                      | 12.5% | 8                                 | 20.0% | 6                                | 15%  | 4                        | 10%   | 3            | 7.5% |
| 6     | 5                        | 12.5% | 1                      | 2.5%  | 5                                 | 12.5% | 3                                | 7.5% | 6                        | 15%   | 3            | 7.5% |
| 7     | 3                        | 7.5%  | 4                      | 10%   | 3                                 | 7.5%  | 2                                | 5%   | 11                       | 27.5% | 1            | 2.5% |
| 8     | 1                        | 2.5%  | 0                      | 7.5%  | 2                                 | 5.0%  | 1                                | 2.5% | 7                        | 17.5% |              |      |
| 9     | 3                        | 7.5%  | 0                      | 20%   | 3                                 | 7.5%  | 0                                | 0%   | 5                        | 12.5% |              |      |
| 10    | 1                        | 2.5%  | 0                      | 20%   | 1                                 | 2.5%  | 0                                | 0%   | 3                        | 7.5%  |              |      |

Note: N= Absolute Frequency; %= Percentage

**Table 21**

*Descriptive Statistics of Sample: Sample Size, Quartiles, Interquartile Range, Mean, Standard Deviation, Kurtosis, and Skewness*

| Scales of SDQ              | Length | 1Q   | 3Q   | IQR  | Median | Mean | SD   | Kurtosis | Skewness |
|----------------------------|--------|------|------|------|--------|------|------|----------|----------|
| Emotional Symptoms         | 40     | 2.00 | 6.00 | 4.00 | 4.00   | 4.33 | 2.61 | -0.87    | 0.40     |
| Conduct Problems           | 40     | 1.00 | 5.00 | 4.00 | 3.00   | 3.17 | 2.21 | -0.87    | 0.47     |
| Hyperactivity/ Inattention | 40     | 4.00 | 6.00 | 2.00 | 5.00   | 5.05 | 2.21 | -0.17    | 0.22     |
| Peer Relationship Problems | 40     | 1.00 | 5.00 | 3.00 | 3.00   | 3.05 | 2.19 | -0.90    | 0.39     |
| Prosocial Behavior         | 40     | 6.00 | 8.00 | 2.00 | 7.00   | 6.95 | 1.80 | -0.46    | -0.32    |
| Impact Score               | 40     | 0    | 3.25 | 3.25 | 2.00   | 2.25 | 2.07 | -0.80    | 0.57     |

|                                 |    |       |       |      |       |       |      |       |      |
|---------------------------------|----|-------|-------|------|-------|-------|------|-------|------|
| <b>Total Difficulties Score</b> | 40 | 11.00 | 18.50 | 7.50 | 14.00 | 15.60 | 6.21 | -0.11 | 0.78 |
|---------------------------------|----|-------|-------|------|-------|-------|------|-------|------|

**Note:** 1Q = first quartile; IQR=Q3-Q1; 3Q= third quartile; SD= standard deviation

- Emotional Symptoms Scale

The normality of the scores on the Emotional Symptoms scale was examined using the Shapiro-Wilk test, revealing a non-significant yet borderline p-value ( $W = 0.94686, p = 0.05917$ ). This suggests a tendency of the data distribution to approximate a normal distribution. In order to gain further insights into the shape of the distribution, kurtosis and skewness values were computed (See *Table 21*). Descriptive statistics of the scores are displayed in *Table 21*, to obtain additional insights into the distribution of scores, please refer to *Table 20* presented above.

Considering the lack of substantial departure from normality as indicated by the Shapiro-Wilk test, a parametric test is deemed appropriate. Consequently, a one-sample two-sided t-test was conducted using the Italian norms ( $\mu = 2.848, \sigma = 2.195$ ) for male under-age adolescents. The t-test analysis conducted on the data yielded a significant p-value ( $t(39) = 3.5827, p < 0.001$ ), providing evidence to reject the null hypothesis that the data originates from the same population as Italian healthy adolescents, 95% CI [3.49, 5.15]. Specifically, the mean score obtained by the sample on the Emotional Symptoms scale was significantly higher than the established norm for Italian underage adolescent males. This indicates that upon their arrival at the UFDA, the participants in our sample exhibited a statistically higher level of Emotional Symptoms compared to the Italian normative population.

- Conduct Problems Scale

The assumption of normality for the scores on the Conduct Problems scale in the sample of under-age male adolescents was assessed using the Shapiro-Wilk normality test. The test revealed a significant p-value ( $W = 0.92996, p = 0.01606$ ), indicating that the scores were not normally distributed. To obtain additional insights into the distribution and descriptive analysis of scores, please refer to *Table 20* and *Table 21*.

Given the departure from normality in the distribution and the relatively small clinical sample size of the group, a non-parametric approach was deemed appropriate. Consequently, a Wilcoxon Signed-Rank test was employed to compare the sample scores with the established Italian norms for under-age male adolescents ( $\mu = 2.353, \sigma = 1.745$ ). The results of the Wilcoxon Signed-Rank test revealed statistical significance ( $V = 568, p = 0.03376$ ), providing

grounds to reject the null hypothesis that the data originates from the same normal population as Italian healthy adolescents, 95% CI [2.49, 3.99]. Consistently, upon their arrival at the UFDA, the participants in our sample displayed a significantly higher level of conduct problems compared to the established norm for Italian adolescents.

- **Hyperactivity/ Inattention Scale**

The normality assumption for the scores on the Hyperactivity/Inattention scale was assessed using the Shapiro-Wilk normality test. The test yielded a non-significant p-value ( $W = 0.9601, p = 0.1688$ ), suggesting no strong evidence to reject the null hypothesis that the data follow a normal distribution. To obtain additional insights into the distribution and descriptive analysis of scores, please refer to *Table 20 and Table 21*. Considering the lack of substantial departure from normality as indicated by the Shapiro-Wilk test, a parametric test is deemed appropriate. Consequently, a one-sample two-sided t-test was conducted with the established Italian norms ( $\mu = 3.78, \sigma = 2.128$ ) for male under-age adolescents. The results of the t-test indicated a significant p-value ( $t(39) = 3.64, p < 0.001$ ), providing evidence to reject the null hypothesis that the data originates from the same normal population as Italian healthy adolescents 95% CI [4.34, 5.75]. Specifically, the findings revealed that the participants in our study exhibited significantly higher levels of hyperactivity/inattention upon their arrival at the UFDA compared to the normative Italian adolescent population.

- **Peer Relationship Problems Scale**

The normality assumption of the scores on the Peer Relationship Problems scale was examined using the Shapiro-Wilk normality test. The test yielded a significant p-value ( $W = 0.94044, p = 0.03578$ ), suggesting evidence to reject the null hypothesis that the data follow a normal distribution. To obtain additional insights into the distribution and descriptive analysis of scores, please refer to *Table 20 and Table 21*.

Considering the nature of the data and the departure from normality, a non-parametric test, specifically the Wilcoxon rank sum test with continuity correction, was employed. This test was conducted to compare the sample scores on the Peer Relationship Problems scale to the established norms for under-age male adolescents in Italy ( $\mu = 1.641, \sigma = 1.831$ ). The results of the Wilcoxon signed-rank test yielded statistically significant findings ( $V = 636, p = 0.002378$ ), indicating a significant difference between the scores of our sample on the Peer Relationship Problems scale and the established norms for the Italian adolescent population,

95% CI [2, 3.50]. This suggests that our sample exhibited higher difficulties in their relationships with peers compared to the Italian normative population during their initial assessment at the UFDA.

- Prosocial Behavior Scale

The normality of the Prosocial Behavior scale scores was examined using the Shapiro-Wilk test. The test results indicated a non-significant p-value ( $W = 0.95478, p = 0.1108$ ), suggesting that there is no significant departure from normality in the data distribution. To obtain additional insights into the distribution and descriptive analysis of scores, please refer to *Table 20 and Table 21*.

Considering the normality of the data, a one-sample, two-sided t-test was performed to assess its relationship with the norms ( $\mu = 7.60, \sigma = 1.82$ ) for under-age male adolescents who sought help in UFDA. The results of the t-test revealed a significant difference ( $t(39) = -2.3162, p = 0.02589$ ) in Prosocial Behavior Scale scores between the two groups 95% CI [6.37, 7.52]. Specifically, the sample of under-age male adolescents seeking help at the UFDA exhibited lower levels of prosocial behavior compared to the normative data

- Total Difficulties Score

The normality assumption of the scores on the Total Difficulties score was examined using the Shapiro-Wilk normality test. The test yielded a significant p-value ( $W = 0.93935, p = 0.03287$ ) suggesting evidence to reject the null hypothesis that the data follow a normal distribution.

Descriptive analysis of the scores is displayed in *Table 21*.

To obtain additional insights into the distribution of scores, please refer to *Table 22* presented below.

**Table 22**

*Frequency and Percentage Analysis of Total Difficulties Scale Scores*

| Score | N | Percentage |
|-------|---|------------|
| 6     | 1 | 2.5%       |
| 8     | 3 | 7.5%       |
| 9     | 2 | 5%         |
| 10    | 2 | 5%         |
| 11    | 4 | 10%        |
| 12    | 2 | 5%         |

|    |   |      |
|----|---|------|
| 13 | 3 | 7.5% |
| 14 | 4 | 10%  |
| 15 | 2 | 5%   |
| 16 | 2 | 5%   |
| 17 | 4 | 10%  |
| 18 | 1 | 2.5% |
| 20 | 2 | 5%   |
| 21 | 1 | 2.5% |
| 23 | 2 | 5%   |
| 24 | 1 | 2.5% |
| 26 | 1 | 2.5% |
| 27 | 1 | 2.5% |
| 29 | 1 | 2.5% |
| 32 | 1 | 2.5% |

Note: N= Absolute frequency

Given the departure from normality observed in the data, the Wilcoxon rank sum test with continuity correction, was utilized. This test aimed to assess the differences between the sample scores and the established norms for under-age male adolescents in Italy ( $\mu = 10.63$ ,  $\sigma = 5.485$ ). The results of the Wilcoxon rank sum test yielded statistically significant findings ( $V = 722$ ,  $p < 0.001$ ), indicating significant differences between the sample scores and the established norms 95% CI [13, 17,49]. These findings suggest that upon arrival at the UFDA, the participants in our sample exhibited a higher total difficulties score compared to the Italian adolescent population.

- Impact Score

Presently, the established norms in Italy for assessing the impact score are deficient. Within the "Look@Me" project, the complete version of the SDQ was not employed, thereby excluding the impact supplement from the established norms.

Regarding the Impact score derived from the questionnaire, the corresponding descriptive statistics are presented in *Table 20* and *Table 21*. Notably, a significant proportion of the sample, specifically 40%, reported that their difficulties had a low normal impact (score = 0) to a borderline impact (score = 1) on their lives. In contrast, 60% of the sample indicated an abnormal impact of their difficulties on their lives by reporting a score of 2 or higher on the impact scale. (<https://www.sdqinfo.org/py/sdqinfo/b3.py?language=Italian>, n.d.).

#### 4.2.2 A Comparative Analysis of Pre-Scores on the Strengths and Difficulties Questionnaire (SDQ) between Under-Age Female Adolescents and Normative Data

**Table 23**

*Frequency and Percentage Analysis of SDQ Scale Scores*

| Score | Emotional Symptoms Scale |       | Conduct Problems Scale |       | Hyperactivity / Inattention Scale |       | Peer Relationship Problems Scale |       | Prosocial Behavior Scale |       | Impact Score |       |
|-------|--------------------------|-------|------------------------|-------|-----------------------------------|-------|----------------------------------|-------|--------------------------|-------|--------------|-------|
|       | N                        | %     | N                      | %     | N                                 | %     | N                                | %     | N                        | %     | N            | %     |
| 0     | 0                        | 0%    | 5                      | 4.9%  | 1                                 | 1%    | 13                               | 12.7% | 0                        | 0%    | 15           | 14.7% |
| 1     | 2                        | 2%    | 15                     | 14.7% | 3                                 | 2.9%  | 13                               | 12.7% | 0                        | 0%    | 12           | 11.8% |
| 2     | 3                        | 2.9%  | 21                     | 20.6% | 6                                 | 5.9%  | 21                               | 20.6% | 1                        | 1%    | 9            | 8.8%  |
| 3     | 14                       | 13.7% | 23                     | 22.5% | 12                                | 11.8% | 13                               | 12.7% | 6                        | 5.9%  | 15           | 14.7% |
| 4     | 12                       | 11.8% | 14                     | 13.7% | 11                                | 10.8% | 14                               | 13.7% | 4                        | 3.9%  | 17           | 16.7% |
| 5     | 14                       | 13.7% | 15                     | 14.7% | 23                                | 22.5% | 8                                | 7.8%  | 9                        | 8.8%  | 15           | 14.7% |
| 6     | 10                       | 9.8%  | 4                      | 3.9%  | 13                                | 12.7% | 9                                | 8.8%  | 15                       | 14.7% | 7            | 6.9%  |
| 7     | 10                       | 9.8%  | 1                      | 1%    | 21                                | 20.6% | 8                                | 7.8%  | 12                       | 11.8% | 7            | 6.9%  |
| 8     | 13                       | 12.7% | 3                      | 2.9%  | 9                                 | 8.8%  | 1                                | 1%    | 15                       | 14.7% | 3            | 2.9%  |
| 9     | 12                       | 11.8% | 1                      | 1%    | 3                                 | 2.9%  | 2                                | 2%    | 18                       | 17.6% | 2            | 2.0%  |
| 10    | 12                       | 11.8% | 0                      | 0%    | 0                                 | 0%    | 0                                | 0%    | 22                       | 21.6% | 0            | 0%    |

*Note:* N= Absolute Frequency; %= Percentage

**Table 24**

*Descriptive Statistics of Sample: Sample Size, Quartiles, Interquartile Range, Mean, Standard Deviation, Kurtosis, and Skewness*

| Scales of SDQ                     | Length | 1Q   | 3Q   | IQR  | Median | Mean | SD   | Kurtosis | Skewness |
|-----------------------------------|--------|------|------|------|--------|------|------|----------|----------|
| <b>Emotional Symptoms</b>         | 102    | 4.00 | 8.00 | 4.00 | 6.00   | 6.18 | 2.53 | -1.19    | -0.04    |
| <b>Conduct Problems</b>           | 102    | 2.00 | 4.00 | 2.00 | 3.00   | 3.15 | 1.89 | 0.34     | 0.67     |
| <b>Hyperactivity/ Inattention</b> | 102    | 4.00 | 7.00 | 3.00 | 5.00   | 5.24 | 2.01 | -0.56    | -0.31    |

|  |     |      |       |      |       |       |      |       |       |
|--|-----|------|-------|------|-------|-------|------|-------|-------|
| <b>Peer Relationship Problems</b>      | 102 | 1.25 | 5.00  | 3.75 | 3.00  | 3.20  | 2.31 | -0.64 | -0.48 |
| <b>Prosocial Behavior Impact Score</b> | 102 | 6.00 | 9.00  | 3.00 | 8.00  | 7.42  | 2.17 | -0.64 | 0.48  |
| <b>Total Difficulties Score</b>        | 102 | 14   | 21.00 | 7.00 | 18.00 | 17.75 | 5.92 | -0.31 | 0.25  |

**Note:** 1Q = first quartile; IQR=Q3-Q1; 3Q= third quartile; SD= standard deviation

- Emotional Symptoms Scale

The normality of the scores on the Emotional symptoms scale was examined using the Shapiro-Wilk test, revealing a significant p-value ( $W = 0.94088$ ,  $p < 0.001$ ) suggesting evidence to reject the null hypothesis that the data follow a normal distribution. The descriptive statistics of scores on the Emotional Symptoms scale are exhibited in *Table 24*. To obtain additional insights into the distribution of scores, please refer to *Table 23* presented above.

Given the departure from normality observed in the data, a non-parametric test, specifically the Wilcoxon rank sum test with continuity correction, was utilized. This test aimed to assess the differences between the sample scores on the Emotional symptoms scale and the established norms for under-age female adolescents in Italy ( $\mu = 4.65$ ,  $\sigma = 2.606$ ). The results of the Wilcoxon rank sum test yielded statistically significant findings ( $V = 4057$ ,  $p < 0.001$ ) providing evidence to reject the null hypothesis that the data originates from the same normal population as Italian healthy adolescents, 95% CI, [5.50, 6.50]. Specifically, the scores obtained by the sample on the Emotional Symptoms Scale was significantly higher than the established norm for Italian underage adolescent females. This indicates that upon their arrival at the UFDA, the participants in our sample exhibited a statistically higher level of Emotional Symptoms compared to the Italian normative population.

- Conduct Problems Scale

The normality assumption of the scores on the Conduct Problems Scale was assessed using the Shapiro-Wilk test, which revealed a significant p-value ( $W = 0.94127$ ,  $p < 0.001$ ), providing evidence to reject the null hypothesis that the data conform to a normal distribution. To obtain additional insights into the distribution and descriptive statistics of scores, please refer to *Table 23* and *Table 24* presented above.

Considering the departure from normality observed in the data, a non-parametric test, a Wilcoxon Rank Sum Test was conducted to compare the sample scores on the Conduct Problems scale with the established norms for under-age female adolescents in Italy ( $\mu = 2.484$ ,  $\sigma = 1.7842$ ). The results yielded statistically significant findings ( $V = 3862$ ,  $p < 0.001$ ), providing evidence to reject the null hypothesis that the data originates from the same normal population as Italian healthy adolescents 95% CI [2.50, 3.50]. Specifically, the scores obtained by the sample on the conduct problems scale was significantly higher than the established norm for Italian underage adolescent females. This indicates that upon their arrival at the UFDA, the participants in our sample exhibited statistically higher levels of conduct problems compared to the Italian normative population.

- **Hyperactivity/Inattention Scale**

The normality assumption of the scores on the Hyperactivity/Inattention scale was assessed using the Shapiro-Wilk test, which revealed a significant p-value ( $W = 0.96083$ ,  $p < 0.001$ ) providing evidence to reject the null hypothesis that the data conform to a normal distribution. Further information of the distribution and descriptive statistics of scores are depicted in table *Table 23* and *Table 24*.

Considering the departure from normality observed in the data, a non-parametric test, a Wilcoxon rank sum test was conducted to compare the sample scores on the Hyperactivity/Inattention scale with the established norms for under-age female adolescents in Italy ( $\mu = 3.649$ ,  $\sigma = 2.207$ ). The statistical analysis revealed statistically significant findings ( $V = 4455$ ,  $p < 0.001$ ), providing substantial evidence to reject the null hypothesis that the data originates from the same normal population as Italian healthy adolescents, 95% CI [4.99, 5.50]. In particular, the scores obtained by the sample on the hyperactivity/inattention scale were significantly higher than the established norm for Italian underage adolescent females. This indicates that upon their arrival at the UFDA, the participants in our study exhibited statistically elevated levels of hyperactivity/inattention, surpassing the typical experiences observed in the Italian normative population.

- **Peer Relationship Problems Scale**

The normality assumption of the scores on the Peer Relationship Problems scale was assessed using the Shapiro-Wilk test, which revealed a significant p-value ( $W = 0.93974$ ,  $p < 0.001$ ) providing evidence to reject the null hypothesis that the data conform to a normal



distribution. For the distribution and descriptive statistics of scores on the Peer Relationship Problems scale see *Table 23* and *Table 24*.

Considering the departure from normality observed in the data, a non-parametric test, a Wilcoxon rank sum test was conducted to compare the sample scores on the Peer Relationship Problems scale with the established norms for under-age female adolescents in Italy ( $\mu = 1.879$ ,  $\sigma = 1.894$ ). The results of the statistical analysis yielded significant findings ( $V = 4187$ ,  $p < 0.001$ ), providing compelling evidence to reject the null hypothesis that the data originated from the same normal population as Italian healthy adolescents, 95% CI [2.50, 3.50]. Specifically, the mean score obtained by the sample on the peer relationship problems scale was significantly higher than the established norm for Italian underage adolescent females. This signifies that upon their arrival at the UFDA, the participants in our study demonstrated statistically elevated levels of difficulties in their relationships with peers, surpassing the average experiences observed in the Italian normative population.

- Prosocial Behavior Scale

The normality assumption of the scores on the Prosocial Behavior scale was assessed using the Shapiro-Wilk test, which revealed a significant p-value ( $W = 0.91381$ ,  $p\text{-value} = p < 0.001$ ) providing evidence to reject the null hypothesis that the data conform to a normal distribution. Further information of the scores is depicted in *Table 23* and *Table 24*.

In light of the departure from normality observed in the dataset, the Wilcoxon rank sum test was conducted to compare the scores of the sample on the Prosocial Behavior with the established norms for under-age female adolescents in Italy ( $\mu = 8.08679$ ,  $\sigma = 1.686$ ). The analysis yielded statistically significant findings ( $V = 1684$ ,  $p < 0.001$ ), indicating substantial differences between the scores of the sample and the established norms, 95% CI, [7, 7.99]. Specifically, the participants in the sample exhibited lower levels of prosocial skills upon their arrival at the UFDA compared to the normative population of Italian female adolescents.

- Total Difficulties Score

The normality of the Total Difficulties score was examined using the Shapiro-Wilk test. The test results indicated a non-significant p-value ( $W = 0.98044$ ,  $p\text{-value} = 0.1354$ ), suggesting that there is no significant departure from normality in the data distribution. The data displayed a slightly positive skewness and a platykurtic distribution. Further information of the scores is depicted in *Table 24* and *25*

Taking into consideration the data's normality, a one-sample, two-sided t-test was conducted to examine its association with the norms ( $\mu = 12.672$ ,  $\sigma = 6.178$ ) for under-age female adolescents seeking assistance at UFDA. The t-test results revealed a significant difference ( $t(101) = -21603$ ,  $p < 0.001$ ) in Total Difficulties scores between the two groups, 95% CI [16.59, 18.91]. These findings indicate that the sample of under-age male adolescents seeking help at UFDA exhibited significantly higher levels of difficulties compared to the normative data.

**Table 25**

*Frequency and Percentage Analysis of Total Difficulties Scores*

| Score | N  | Percentage |
|-------|----|------------|
| 6     | 1  | 0.98%      |
| 7     | 3  | 2.94%      |
| 8     | 2  | 1.96%      |
| 9     | 4  | 3.92%      |
| 10    | 1  | 0.98%      |
| 11    | 4  | 3.92%      |
| 12    | 5  | 4.9%       |
| 13    | 3  | 2.94%      |
| 14    | 8  | 7.84%      |
| 15    | 7  | 6.86%      |
| 16    | 8  | 7.84%      |
| 17    | 4  | 3.92%      |
| 18    | 3  | 2.94%      |
| 19    | 10 | 9.8%       |
| 20    | 6  | 5.88%      |
| 21    | 14 | 13.73%     |
| 23    | 2  | 1.96%      |
| 24    | 3  | 2.94%      |
| 25    | 2  | 1.96%      |
| 26    | 5  | 4.9%       |
| 27    | 1  | 0.98%      |
| 28    | 1  | 0.98%      |
| 39    | 1  | 0.98%      |
| 31    | 2  | 1.96%      |

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Note: N= Absolute Frequency

- Impact Score

Regarding the Impact score derived from the questionnaire administered to female under-age adolescents, a more pronounced impact profile is evident compared to their male counterparts (as shown in *Table 20*). The descriptive statistics for female under-age adolescents are presented in *Table 23* and *Table 24*. It is noteworthy that merely 26.5% of the sample reported their difficulties as having a low normal impact (score = 0) to a borderline impact (score = 1) on their lives. In stark contrast, a substantial majority of the sample, specifically 73.5%, indicated an abnormal impact of their difficulties on their lives by reporting a score of 2 or higher on the impact scale (<https://www.sdqinfo.org/py/sdqinfo/b3.py?language=Italian>, n.d.).

#### **4.2.3 A Comparative Analysis of Pre-Scores on the Strengths and Difficulties Questionnaire (SDQ) between Under-Age Adolescents and Legal-Age Adolescents**

To our knowledge, there is a notable absence of established norms for Italian legal-age adolescents and young adults, which is consistent with the situation on an international scale. Scant research has encompassed this particular demographic, with only one Australian study (Brann et al., 2018b) investigating the psychometric properties of a young adult SDQ in comparison to the adolescent version. Due to the dearth of normative data in Italy, our approach involved a comparative analysis between the data of under-age adolescents and legal-age adolescents for each subscale, aiming to discern potential score variations as individuals' transit into legal adulthood. Furthermore, we conducted a two-way ANOVA for each subscale to assess the potential interaction effects of gender and age on the scores.

Initially, a Chi-squared test was employed to examine the distribution of gender within both age groups, which yielded non-significant results ( $\chi^2(1) = 0.014898$ ,  $p\text{-value} = 0.9029$ ), indicating that the distribution of gender across both age groups is comparable. As depicted in *Table 12*, females constitute the majority in both age groups, affirming the similarity in gender distribution between the different age cohorts.

- Emotional Symptoms Scale

A two-way Analysis of Variance (ANOVA) was conducted to examine the interaction effect of gender and age on the Emotional Symptoms score. The results showed no significant interaction effect between gender and age ( $F(1, 247) = 0.233, p\text{-value} = 0.629$ ). Similarly, there was no significant impact of age alone on the Emotional Symptoms score ( $F(1, 247) = 0.106, p\text{-value} = 0.745$ ), suggesting that age did not exert a substantial influence on the scores. However, a significant gender effect was found ( $F(1, 247) = 36.856, p < 0.001$ ), indicating notable differences in the Emotional Symptoms Scale scores between males ( $M = 4.27, SD = 2.27$ ) and females ( $M = 6.26, SD = 2.36$ ). This gender difference remained consistent across both adolescents and young adults, with no significant variation between the two age groups.

Despite these findings, the assessment of the normality assumption for ANOVA revealed a significant departure from normality ( $W = 0.96411, p < 0.001$ ), as indicated by a kurtosis of -0.91 and a skewness value of -0.08. In light of this, the Kruskal-Wallis Rank Sum test, a non-parametric equivalent of one-way ANOVA, was employed to ensure robust findings. Unlike parametric tests, the Kruskal-Wallis test does not rely on the assumption of normality. However, choosing the Kruskal-Wallis test precluded the assessment of interaction effects.

The results of the Kruskal-Wallis Rank Sum test confirmed the conclusions drawn from ANOVA. Specifically, there was no significant age effect observed on the Emotional Symptoms Scale scores ( $H(1) = 0.16626, p\text{-value} = 0.6835$ ). Once again, a significant effect of gender was detected ( $H(1) = 31.992, p < 0.001$ ).

- Conduct Problems Scale

A two-way Analysis of Variance (ANOVA) was conducted to examine the interaction effect of gender and age on the Conduct Problems Scale. The results revealed no significant interaction effect between gender and age ( $F(1, 247) = 0.011, p\text{-value} = 0.916$ ). Similarly, there was no significant impact of age alone ( $F(1, 247) = 2.060, p\text{-value} = 0.152$ ) or gender alone ( $F(1, 247) = 0.041, p\text{-value} = 0.840$ ) on the Conduct Problems Scale, suggesting that neither age nor gender exerted a substantial influence on the scores.

The assessment of the normality assumption for ANOVA was conducted using the Shapiro-Wilk test. The conduct problems scores obtained from the entire sample exhibited a significant departure from normality ( $W = 0.93162, p < 0.001$ ).

In light of these findings, the Kruskal-Wallis Rank Sum test, a non-parametric equivalent of one-way ANOVA, was employed to ensure robust findings. However, the use of the Kruskal-Wallis test precluded the assessment of interaction effects. The results of the Kruskal-Wallis Rank Sum test confirmed the absence of a significant age effect ( $H(1) = 1.6751, p\text{-value}$

= 0.1956) or gender effect ( $H(1) = 0.024428$ ,  $p\text{-value} = 0.8758$ ) previously observed by ANOVA. These findings suggest that neither age nor gender exerted a substantial influence on the conduct problems scores.

- **Hyperactivity Inattention Scale**

A two-way Analysis of Variance (ANOVA) was conducted to examine the interaction effect of gender and age on the Hyperactivity/Inattention Problems score. The results indicated no significant interaction effect between gender and age ( $F(1, 247) = 0.007$ ,  $p\text{-value} = 0.9327$ ). Similarly, there was no significant impact of gender alone on the Hyperactivity/Inattention Scale score ( $F(1, 247) = 0.291$ ,  $p\text{-value} = 0.5900$ ), suggesting that gender did not exert a substantial influence on the scores. However, a significant age effect was observed ( $F(1, 247) = 5.598$ ,  $p\text{-value} = 0.0187$ ), indicating notable differences in the Hyperactivity/Inattention levels between under-age adolescents ( $M = 5.05$ ,  $SD = 2.21$ ) and legal-age adolescents ( $M = 4.44$ ,  $SD = 1.93$ ). This age difference remained consistent across both sexes.

Nevertheless Hyperactivity/Inattention Problems Scale scores obtained from the entire sample demonstrated a significant departure from normality ( $W = 0.97461$ ,  $p < 0.001$ ). Therefore, the Kruskal-Wallis Rank Sum test is deemed more appropriate to ensure robust findings. The Kruskal-Wallis test confirmed the results of ANOVA, once again revealing a significant age effect ( $H(1) = 4.9581$ ,  $p\text{-value} = 0.02597$ ) and no significant effect of gender ( $H(1) = 0.82188$ ,  $p\text{-value} = 0.3646$ ).

- **Peer Relationship Problems**

A two-way Analysis of Variance (ANOVA) was conducted to examine the interaction effect of gender and age on the Peer Relationship Problems Scale score. The results indicated no significant interaction effect between gender and age ( $F(1, 247) = 0.009$ ,  $p\text{-value} = 0.925$ ). Additionally, no significant age effect ( $F(1, 247) = 1.818$ ,  $p\text{-value} = 0.179$ ) or gender effect ( $F(1, 247) = 0.344$ ,  $p\text{-value} = 0.558$ ) were observed. These findings suggest that neither age nor gender exerted a substantial influence on the peer relationship problems scores. However, the peer relationship problems scores obtained from the sample exhibited a significant departure from normality ( $W = 0.94351$ ,  $p < 0.001$ ). Due to the non-normal distribution of the data, the Kruskal-Wallis Rank Sum test was used to ensure robust findings. The results of ANOVA were confirmed regarding the age effect ( $H(1) = 0.87639$ ,  $p\text{-value} = 0.3492$ ) and gender effect ( $H(1) = 0.23264$ ,  $p\text{-value} = 0.6296$ ), both of which were non-significant.

- Prosocial Behavior Scale

A two-way Analysis of Variance (ANOVA) was conducted to examine the interaction effect of gender and age on the Prosocial Behavior scale score. The results indicated no significant interaction effect between gender and age ( $F(1, 247) = 0.036, p\text{-value} = 0.850$ ). Additionally, no significant gender effect ( $F(1, 247) = 2.656, p\text{-value} = 0.104$ ) was observed. However, ANOVA yielded a significant p-value for the age effect ( $F(1, 247) = 17.632, p < 0.001$ ). These findings suggest that while gender did not have an effect on prosocial behavior, legal age adolescents had higher prosocial behavior scores ( $M = 8.29, SD = 1.59$ ) compared to under-age adolescents ( $M = 7.28, SD = 2.07$ ).

The assessment of the normality assumption was conducted using the Shapiro-Wilk test. However, the Prosocial Behavior Scale scores obtained from the entire sample exhibited a significant departure from normality ( $W = 0.90878, p < 0.001$ ), as indicated by a kurtosis of -0.14 and a skewness value of -0.73.

Due to the non-normal distribution of the data, the Kruskal-Wallis Rank Sum test was deemed appropriate to check for robust findings. The analysis of the Prosocial Behavior Scale scores through the Kruskal-Wallis Rank Sum test confirmed the age effect ( $H(1) = 14.919, p < 0.001$ ) already found through ANOVA. However, in contrast to ANOVA, the Kruskal-Wallis Rank Sum test revealed a significant gender effect ( $H(1) = 4.1292, p\text{-value} = 0.04215$ ). In particular, males displayed lower prosocial behavior scores ( $M = 7.43, SD = 1.77$ ) compared to females ( $M = 7.84, SD = 1.99$ ).

- Total Difficulties Scale

The effect of gender and age group on the total difficulties score was examined using a two-way ANOVA. The analysis of the total difficulties scores revealed no significant interaction effect between gender and age group ( $F(1, 247) = 0.029, p\text{-value} = 0.86529$ ). Additionally, there was no significant effect of age alone on the total difficulties score ( $F(1, 247) = 3.052, p\text{-value} = 0.08186$ ). However, a significant effect of gender was found ( $F(1, 247) = 8.418, p\text{-value} = 0.00405$ ). Particularly the female group ( $M = 17.26, SD = 5.60$ ) had a higher total difficulties score compared to the male group ( $M = 14.97, SD = 5.66$ ).

It is important to note that the normality assumption for ANOVA was not met ( $W = 0.98336, p\text{-value} = 0.004962$ ), as indicated by a kurtosis of -0.26 and a skewness value of 0.34. Therefore, to ensure robust findings and validate the results of ANOVA, the Kruskal-Wallis

Rank Sum test was used. However, by choosing the Kruskal-Wallis test, the assessment of interaction effects was not possible.

Kruskal-Wallis test confirmed the results of ANOVA regarding the age effect ( $H(1) = 1.8371$ ,  $p\text{-value} = 0.1753$ ), which did not yield significant results. Furthermore, the Kruskal-Wallis test also revealed a significant gender effect ( $H(1) = 11.12$ ,  $p < 0.001$ ).

- Impact Score

A two-way ANOVA was conducted to investigate the influence of gender and age group on the impact score. The analysis revealed no significant interaction effect between gender and age group ( $F(1, 247) = 0.03$ ,  $p\text{-value} = 0.863007$ ). However, significant effects were observed for age ( $F(1, 247) = 12.43$ ,  $p < 0.001$ ) and gender ( $F(1, 247) = 12.67$ ,  $p < 0.001$ ).

Specifically, legal-age adolescents ( $M = 4.13$ ,  $SD = 2.34$ ) exhibited a higher impact score compared to the under-age adolescents' group ( $M = 3.10$ ,  $SD = 2.35$ ). Furthermore, the female group ( $M = 3.87$ ,  $SD = 2.37$ ) displayed a higher impact score compared to the male group ( $M = 2.75$ ,  $SD = 2.26$ ).

#### **4.2.4. A Comparative Analysis of Pre-Scores on the Strengths and Difficulties Questionnaire (SDQ) between Adolescents' self-report and Parents informant-report.**

Currently, there is a notable lack of established Italian norms for the informant version of the Strengths and Difficulties Questionnaire (SDQ) specifically tailored to the age groups of interest in this study. Given the scarcity of normative data in Italy, our approach involved a comparative analysis between the self-report data of adolescents and the informant reports provided by their parents for each subscale. For sample characteristics refer to *Table 4*.

A Comparative Analysis of Pre-Scores on the SDQ was conducted to examine the self-report of adolescents and the informant-report provided by their parents ( $N = 170$ ). The objective of this analysis was to assess the disparities and agreements in the scores obtained from both sources. However, in this specific step, age and gender were not included in the concordance analysis due to a significant decrease in the sample size, which could potentially impact the validity of the results.

The assessment of the normality assumption was conducted using the Shapiro-Wilk test, which revealed significant  $p$ -values for each subscale and for the total difficulties score. Therefore, to compare the value levels of self-reports completed by the adolescent group and

informant-reports compared by their parents, a Wilcoxon Rank sum test is used for each subscale.

**Table 26**

*Self-report and Informant Reports: SDQ Subscale Scores Comparison and Correlation.*

| Scales of SDQ                            | Self-report |      | Informant-report |      | P-value of Wilcoxon Signed Rank Test | Spearman's Rank Correlation Coefficient |
|--|-------------|------|------------------|------|--------------------------------------|---|
|  | Mean        | SD   | Mean             | SD   |                                      |   |
| <b>Emotional Symptoms scale</b>          | 5.58        | 2.71 | 4.62             | 2.50 | <i>p-value</i> =<br><b>0.00182*</b>  | 0.41                                    |
| <b>Conduct problems scale</b>            | 3.18        | 1.99 | 3.05             | 2.19 | <i>p-value</i> =<br>0.3808           | 0.46                                    |
| <b>Hyperactivity / Inattention Scale</b> | 5.1         | 2.16 | 3.60             | 2.37 | <i>p</i> < <b>0.001*</b>             | <b>0.30</b>                             |
| <b>Peer Problems Scale</b>               | 3.08        | 2.09 | 2.99             | 2.10 | <i>p-value</i> =<br>0.6021           | 0.47                                    |
| <b>Prosocial Behavior Scale</b>          | 7.42        | 1.94 | 7.24             | 2.30 | <i>p-value</i> =<br>0.8726           | 0.33                                    |
| <b>Total Difficulties Score</b>          | 16.95       | 5.90 | 14.27            | 6.31 | <i>p</i> < <b>0.001*</b>             | <b>0.31</b>                             |
| <b>Impact Score</b>                      | 3.05        | 2.35 | 3.50             | 2.90 | <i>p-value</i> =<br>0.2266           | 0.24                                    |

*Note:* SD= Standard Deviation.

- Emotional Symptoms scale

The Wilcoxon Rank Sum test was employed to compare the ranks of differences between adolescents' self-reports and parents' reports. The analysis revealed a significant p-value ( $W=17163$ ,  $p\text{-value} = 0.00182$ ), indicating a substantial difference in the responses between the two groups. Specifically, adolescents reported a higher mean score on this scale compared to their parents indicating that parents had a lower perception of the Emotional Symptoms their adolescents were reporting (See Table 26).



Furthermore, to evaluate further the concordance between adolescents' self-report and parents' reports the Spearman's Rank Correlation Coefficient test was conducted which resulted in a positive coefficient of 0.41. This finding suggests a moderate level of agreement or similarity between the two measures when assessing the Emotional Symptoms of adolescents. These results indicate that while there is a difference in the central tendency of the two groups' scores, the overall pattern of their relationship is still moderately consistent.

- Conduct Problems scale

The Wilcoxon Rank Sum test was utilized to compare the ranks of differences between adolescents' self-reports and parents' reports. The analysis did not yield a significant p-value ( $W = 15147$ ,  $p\text{-value} = 0.3808$ ) meaning that there was a degree of agreement between adolescents and their parents concerning their conduct problem levels (See *Table 26*).

To evaluate the concordance between adolescents and parents, a Spearman's Rank Correlation Coefficient test was conducted, resulting in a positive coefficient of 0.46. This finding suggests a moderate level of similarity between the two measures when assessing the conduct problems of adolescents.

- Hyperactivity / Inattention Scale

The Wilcoxon Rank Sum test was employed to compare the ranks of the differences between adolescents' self-reports and parents' reports. The analysis yielded a significant p-value ( $W = 19622$ ,  $p < 0.001$ ). This finding implies a lack of consensus between parents and adolescents concerning their hyperactivity/inattention levels. Specifically, adolescents reported higher mean scores on the Hyperactivity Inattention scale compared to their parents' mean scores (See *Table 26*).

The concordance between adolescents and parents was evaluated using Rank Correlation Coefficient test. The analysis yielded a correlation coefficient of 0.30, indicating a weak to moderate level of similarity between the two measures when assessing the hyperactivity/inattention levels of adolescents. The relatively low correlation suggests that there are differences in how adolescents and parents perceive and report hyperactivity/inattention, contributing to the lack of consensus observed in the Wilcoxon Rank Sum test.

- Peer Relationship Problems Scale

The Wilcoxon Rank Sum test was employed to compare the ranks of the differences between adolescents' self-reports and parents' reports. The analysis yielded a non-significant p-value ( $W = 14831$ ,  $p\text{-value} = 0.6021$ ), indicating no statistically significant difference between the two reports. This suggests a degree of agreement between adolescents and their parents regarding the Peer Relationship problems of the former (See *Table 26*).

The concordance between adolescents and parents was evaluated using a Spearman's Rank Correlation Coefficient test. The analysis yielded a correlation coefficient of 0.47, indicating a reasonably consistent agreement between the two reports, with a moderate strength of correlation. Therefore, there is a tendency that the scores on the self-report and informant report to move in the same direction.

- Prosocial Behavior Scores

The Wilcoxon Rank Sum test was utilized to compare the ranks of the differences between adolescents' self-reports and parents' reports. The analysis revealed a non-significant p-value ( $W = 14508$ ,  $p\text{-value} = 0.8726$ ), indicating no statistically significant difference between the two sets of reports. This suggests a level of agreement between adolescents and their parents regarding the prosocial behavior scores being examined (See *Table 26*).

To assess the concordance between adolescents and parents, a Spearman's Rank Correlation Coefficient test was conducted. The correlation coefficient was determined to be 0.33, indicating a moderate level of correlation between the two sets of reports.

Overall, the non-significant p-value from the Wilcoxon Rank Sum test and the moderate Spearman's Rank Correlation coefficient suggest that there is agreement between adolescents' self-reports and parents' reports regarding the variable under consideration, albeit with some variability in their assessments.

- Total difficulties Score

The Wilcoxon Rank Sum test was employed to compare the ranks of the differences between adolescents' self-reports and parents' reports. The analysis yielded a significant p-value ( $W = 17643$ ,  $p < 0.001$ ), indicating a lack of consensus between parents and adolescents concerning their overall difficulties. Specifically, adolescents reported higher total difficulties mean scores compared to their parents' mean scores (See *Table 26*)

To assess the concordance between adolescents and parents, a Spearman rank correlation analysis was conducted. The correlation coefficient was determined to be 0.31, suggesting a moderate to low level of similarity between the two sets of reports when assessing the overall difficulties of adolescents. Overall, the significant p-value from the Wilcoxon Rank Sum test and the moderate to low correlation coefficient from the Spearman rank Correlation analysis suggest that there is a degree of discrepancy between adolescents' self-reports and parents' reports regarding their overall difficulties, but there is still some level of similarity between the two measures.

- Impact Score

The Wilcoxon Rank Sum test was utilized to compare the ranks of the differences between adolescents' self-reports and parents' reports. The analysis yielded a non-significant p-value ( $W = 13285$ ,  $p\text{-value} = 0.2266$ ), suggesting that there is no statistically significant difference between the two sets of reports when it comes to evaluating the impact of difficulties on adolescents' daily functioning, as both groups seem to have similar perceptions (See *Table 26*).

To assess the concordance between adolescents and parents, a Spearman Rank Correlation Coefficient test was conducted. The correlation coefficient was determined to be 0.24, suggesting a weak level of agreement between the two measures when assessing the impact of difficulties. This means that while there is some degree of agreement between adolescents and parents, there are differences in their perceptions of the impact of difficulties on adolescents' lives. It is essential to consider both perspectives when evaluating the impact of difficulties on adolescents' well-being and functioning.

#### **4.2.5 Before and After Analysis of Strengths and Difficulties Questionnaire Intervention in Adolescents at UFDA**

The subsequent section comprises the analysis of post-intervention outcomes using the Strengths and Difficulties Questionnaire (SDQ) in adolescents who received intervention at UFDA. Specifically, the follow-up version of the SDQ was completed by the patients one month after the conclusion of the intervention at UFDA. The descriptive statistics concerning the number of sessions attended by each patient is presented in *Table 17*.

Among the participants, a total of 62 adolescents completed both the pre-intervention and follow-up versions of the questionnaire. Out of the initial sample of 255 participants who completed the questionnaire, only 24% of them completed the follow-up version.

The characteristics of the sample are provided in *Table 27* below. Due to the size of the sample, the analysis was conducted on the entire sample without stratifying by age group or gender. Therefore, the conclusions drawn from the results are contingent upon this approach.

**Table 27**

*Characteristics of the Sample: Adolescents who Completed the Follow-up Version of SDQ*

|                              | <b>Male</b> | <b>Female</b> | <b>Total</b> |
|------------------------------|-------------|---------------|--------------|
| <b>Under-age Adolescents</b> | 8           | 20            | 28           |
| <b>Legal-age Adolescents</b> | 9           | 25            | 34           |
| <b>Total</b>                 | 17          | 45            | 62           |

As depicted in *Table 27*, the sample comprises a higher proportion of females in both the under-age and legal-age adolescent groups. Nevertheless, the initial Pearson's chi-square analysis examining the distribution of gender across age groups did not yield a significant result ( $\chi^2(1) = 2.8314e-31$ ,  $p\text{-value} = 1$ ). This indicates that despite the predominance of females in the sample, this gender distribution did not have a statistically significant impact on the further analysis.

Additionally, also parents were requested to complete both the pre and follow-up versions of SDQ. In *Table 28*, it can be observed that out of the initial sample of 170 parents, only 27 completed the follow-up version of SDQ, resulting in a participation rate of 16%. Among these, 9 were completed by a single parent, while the remaining 9 were completed by both parents.

**Table 28**

*Characteristics of the Sample: Parents who Completed the Follow-up Version of SDQ*

|                              | <b>Male</b>   |               | <b>Female</b> |               | <b>Total</b> |
|------------------------------|---------------|---------------|---------------|---------------|--------------|
|                              | <b>Mother</b> | <b>Father</b> | <b>Mother</b> | <b>Father</b> |              |
| <b>Under-age Adolescents</b> | 2             | 4             | 10            | 4             | 20           |
| <b>Legal-age Adolescents</b> | 3             | 1             | 2             | 1             | 7            |
| <b>Total</b>                 | 5             | 5             | 12            | 5             | 27           |

Additionally, the follow-up version of the SDQ included matched self-report responses from adolescents and informant reports from parents, totaling 21 sets of responses. Out of these, 6 pairs comprised both adolescents and both parents providing reports, while in 9 instances, only one parent completed the follow-up version. This indicates that for 15 adolescents, at least one parent participated in the follow-up assessment. For detailed sample characteristics, please refer to *Table 29*.

**Table 29**

*Characteristics of the Sample: Paired Adolescents and Parents who Completed the Follow-up Version of SDQ*

|                                  | Male  |       | Female |       | Total |
|----------------------------------|-------|-------|--------|-------|-------|
|                                  | Madre | Padre | Madre  | Padre |       |
| <b>Under-age<br/>Adolescents</b> | 2     | 4     | 8      | 2     | 16    |
| <b>Legal-age<br/>Adolescents</b> | 1     | 0     | 2      | 2     | 5     |
| <b>Total</b>                     | 3     | 4     | 10     | 4     | 21    |

Considering the sample size, it is prudent to employ a non-parametric analysis approach to ensure more robust results. Consequently, the Wilcoxon test is utilized to assess the changes in the scores of each subscale of the Strengths and Difficulties Questionnaire (SDQ) before and after the intervention.

**Table 30**

*Pre- SDQ and Follow-up Self-report SDQ Scores Comparison*

| Scales of SDQ                   | Pre-SDQ Scores |      | Follow-up SDQ Scores |      | P-value of Wilcoxon Signed Rank Test |
|---------------------------------|----------------|------|----------------------|------|--------------------------------------|
|                                 | Mean           | SD   | Mean                 | SD   |                                      |
| <b>Emotional Symptoms scale</b> | 5.77           | 2.27 | 3.82                 | 2.81 | <b>p&lt;0.001*</b>                   |

|  |       |      |       |      |                    |
|--|-------|------|-------|------|--------------------|
| <b>Conduct problems scale</b>            | 3.09  | 1.67 | 2.14  | 1.82 | <b>p&lt;0.001*</b> |
| <b>Hyperactivity / Inattention Scale</b> | 4.87  | 2.37 | 3.41  | 2.27 | <b>p&lt;0.001*</b> |
| <b>Peer Problems Scale</b>               | 3.14  | 2.17 | 2.25  | 2.19 | <b>p&lt;0.001*</b> |
| <b>Prosocial Behavior Scale</b>          | 7.72  | 1.87 | 8     | 2.02 | p-value = 0.1085   |
| <b>Total Difficulties Score</b>          | 16.83 | 5.60 | 11.64 | 7.07 | <b>p&lt;0.001*</b> |
| <b>Impact Score</b>                      | 3.64  | 2.39 | 1.56  | 2.07 | <b>p&lt;0.001*</b> |

**Table 31**

*Pre- SDQ and Follow-up Informant-report SDQ Scores Comparison*

| Scales of SDQ                            | Pre-SDQ Scores |      | Follow-up SDQ Scores |      | P-value of Wilcoxon Signed Rank Test |
|--|----------------|------|----------------------|------|--------------------------------------|
|  | Mean           | SD   | Mean                 | SD   |                                      |
| <b>Emotional Symptoms scale</b>          | 4.07           | 2.63 | 3.37                 | 3.01 | <i>p-value= 0.1278</i>               |
| <b>Conduct problems scale</b>            | 2.74           | 2.08 | 2.37                 | 1.98 | <i>p-value= 0.168</i>                |
| <b>Hyperactivity / Inattention Scale</b> | 3.18           | 2.41 | 3.11                 | 2.27 | <i>p-value = 0.8705</i>              |
| <b>Peer Problems Scale</b>               | 3.51           | 1.92 | 2.55                 | 2.06 | <b><i>p-value= 0.009825*</i></b>     |
| <b>Prosocial Behavior Scale</b>          | 6.40           | 2.79 | 7.62                 | 2.13 | <b><i>p-value= 0.01322*</i></b>      |
| <b>Total Difficulties Score</b>          | 13.51          | 6.35 | 11.40                | 7.30 | p-value= 0.04541                     |
| <b>Impact Score</b>                      | 3.77           | 2.84 | 2.40                 | 2.54 | <b>p&lt;0.001*</b>                   |

**Table 32**

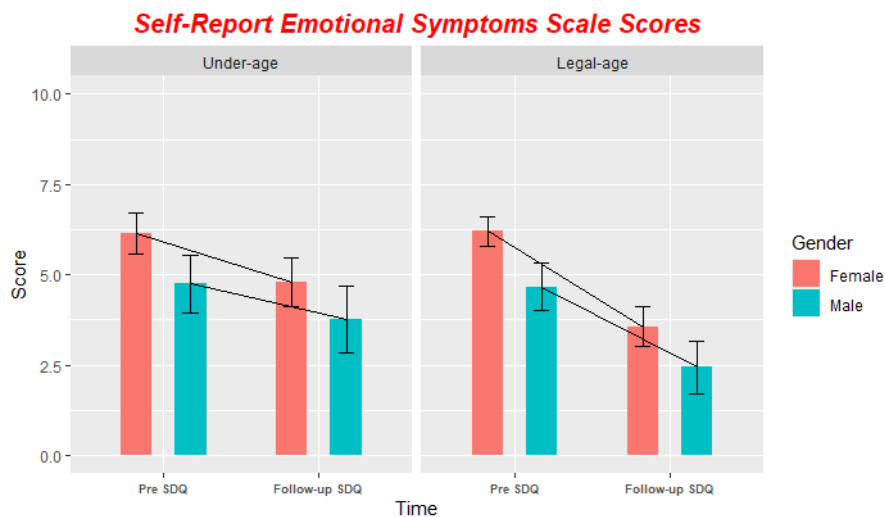
*Self-report and Informant Reports: Follow-up SDQ Subscale Scores Comparison and Correlation*

| Scales of SDQ                            | Self-report Scores (N=15) |      | Informant-report Scores (N=21) |      | P-value of Wilcoxon Signed Rank Test | Spearman's Rank Correlation Coefficient |
|--|---------------------------|------|--------------------------------|------|--------------------------------------|---|
|  | Mean                      | SD   | Mean                           | SD   |                                      |   |
| <b>Emotional Symptoms scale</b>          | 4.47                      | 3.29 | 3.39                           | 2.96 | <i>p-value</i> = <b>0.004691*</b>    | 0.58                                    |
| <b>Conduct problems scale</b>            | 2.60                      | 2.01 | 2.32                           | 1.96 | <i>p-value</i> = 0.09636             | 0.71                                    |
| <b>Hyperactivity / Inattention Scale</b> | 3.60                      | 2.52 | 3.03                           | 2.26 | <i>p-value</i> = <b>0.04408*</b>     | 0.34                                    |
| <b>Peer Problems Scale</b>               | 2.95                      | 2.78 | 2.5                            | 2.04 | <i>p-value</i> = <b>0.005038*</b>    | 0.70                                    |
| <b>Prosocial Behavior Scale</b>          | 7.47                      | 2.27 | 7.71                           | 2.14 | <i>p-value</i> = <b>0.01055*</b>     | 0.31                                    |
| <b>Total Difficulties Score</b>          | 13.30                     | 8.85 | 11.25                          | 2.21 | <i>p-value</i> = <b>0.001761</b>     | 0.55                                    |
| <b>Impact Score</b>                      | 1.97                      | 2.33 | 2.32                           | 2.53 | <i>p</i> = 0.09374                   | 0.60                                    |

- Emotional Symptoms Scale:

A paired Wilcoxon signed-rank test was conducted to analyze the emotional symptoms scale in the self-report SDQ before and after the intervention, resulting in a significant p-value ( $V = 1409, p < 0.001$ ). The mean score of the pre-SDQ was higher than that of the follow-up SDQ indicating a lower level of Emotional Symptoms following the intervention (See *Table 30*). As *Figure 4* illustrates, in both group and gender levels, the follow-up scales of SDQ indicate lower levels of emotional symptoms compared to the pre-assessment scales. Notably, the Wilcoxon tests revealed significant differences among the groups. Specifically, the tests indicated significant differences for female adolescents in the under-age group ( $V = 131.5, p\text{-value} = 0.04567$ ), legal-age group ( $V = 272.5, p < 0.001$ ), and male legal-aged adolescents ( $V = 28, p\text{-value} = 0.02178$ ). However, the Wilcoxon test for under-age male adolescents did not yield a significant result ( $V = 25, p\text{-value} = 0.0655$ ).

**Figure 4**



Furthermore, a paired Wilcoxon signed-rank test was conducted to examine the Emotional Symptoms scale in the informant-report SDQ before and after the intervention. The analysis did not yield a significant p-value ( $V = 146$ ,  $p\text{-value} = 0.1278$ ), indicating that there was no statistically significant difference between the pre-SDQ and follow-up SDQ scores. However, it is worth noting that the mean score of the pre-SDQ was higher than that of the follow-up SDQ indicating a perceived decrease in the level of Emotional Symptoms among adolescents as reported by their parents following the intervention. It is important to emphasize that although this reduction was observed, it did not reach statistical significance (See Table 31).

The concordance between adolescents' self-report and the informants' report was analyzed using the Wilcoxon signed-rank test, which revealed a significant p-value ( $V = 181$ ,  $p\text{-value} = 0.004691$ ). This indicates that there is a statistically significant difference between the self-report and informant report scores for the Emotional Symptoms scale. Specifically, the mean score reported by parents was lower than the mean score reported by the adolescents themselves, suggesting that parents perceived their adolescents to have fewer Emotional Symptoms than what the adolescents themselves reported (See Table 32).

The association between the self-report and informant report for the Emotional Symptoms scale was examined using Spearman's Rank Correlation Coefficient test. The analysis revealed a coefficient of 0.58, indicating a moderate positive association between the two sets of reports. This highlights the existence of a meaningful, albeit moderate level of concordance between the two sources of assessment. These results indicate that while there is a difference in the central tendency of the two groups' scores, the overall pattern of their relationship is still moderately consistent.

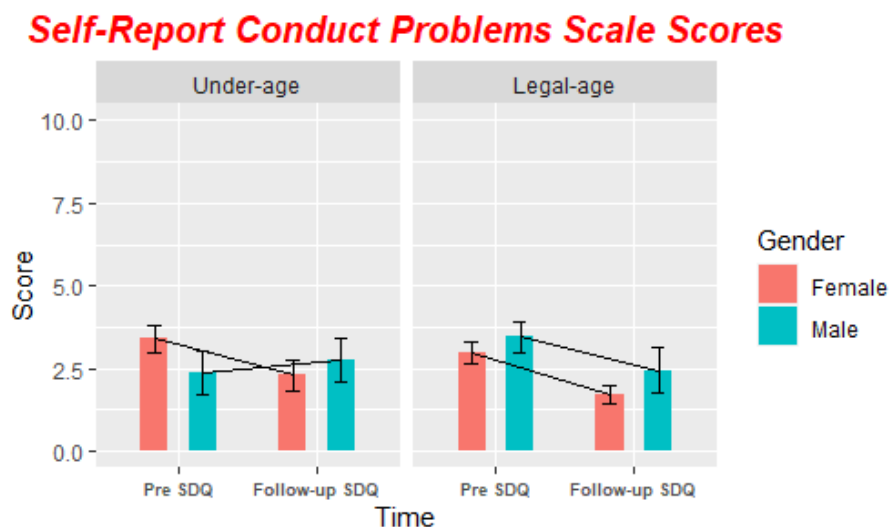


- Conduct Problems Scale:

A paired Wilcoxon signed-rank test was performed to examine the conduct problems scale in the before-after analysis using self-report SDQ scores, revealing a significant p-value ( $V = 1051.5, p < 0.001$ ). The mean score of the pre-SDQ was higher than that of the follow-up suggesting a decrease in the level of conduct problems following the intervention (See *Table 30*).

*Figure 5* provides a visual representation of the findings, revealing that the follow-up scales of SDQ show lower levels of conduct problems compared to the pre-assessment scales in both group and gender levels. However, an exception should be noted for under-age male adolescents, who surprisingly report a slightly higher level of conduct problems ( $M = 2.75; SD = 1.90$ ) after the intervention, although it did not reach statistical significance when compared to their previous sample mean level ( $M = 2.37; SD = 1.84$ ). It is important to mention that the analysis for male under-age adolescents is based on a relatively small sample size of 8 participants. Specifically, the tests indicated significant differences for female adolescents both in the under-age group ( $V = 128, p\text{-value} = 0.01386$ ), and in the legal-age group ( $V = 176.5, p < 0.001$ ). However, the Wilcoxon test for under-age ( $V = 7.5, p\text{-value} = 0.5898$ ) and legal-age male ( $V = 30, p\text{-value} = 0.09824$ ) adolescents did not yield a significant result.

**Figure 5**



Furthermore, a paired Wilcoxon signed-rank test was conducted to examine the conduct problems scale in the informant-report SDQ before and after the intervention. The analysis did not yield a significant p-value ( $V = 141.5, p\text{-value} = 0.168$ ), indicating that there was no statistically significant difference between the pre-SDQ and follow-up SDQ scores. However, it is noteworthy that there was a relative reduction in the mean score of the conduct problems

scale before the intervention compared to after the intervention suggesting a perceived decrease in the level of conduct problems as reported by their parents following the intervention. Although the reduction was observed, it did not reach statistical significance (See *Table 31*).

The concordance between adolescents' self-report and the informants' report was assessed using the Wilcoxon signed-rank test, which yielded a non-significant p-value ( $V = 111$ ,  $p\text{-value} = 0.09636$ ). This suggests that there is no statistically significant difference between the self-report and informant report scores (See *Table 32*).

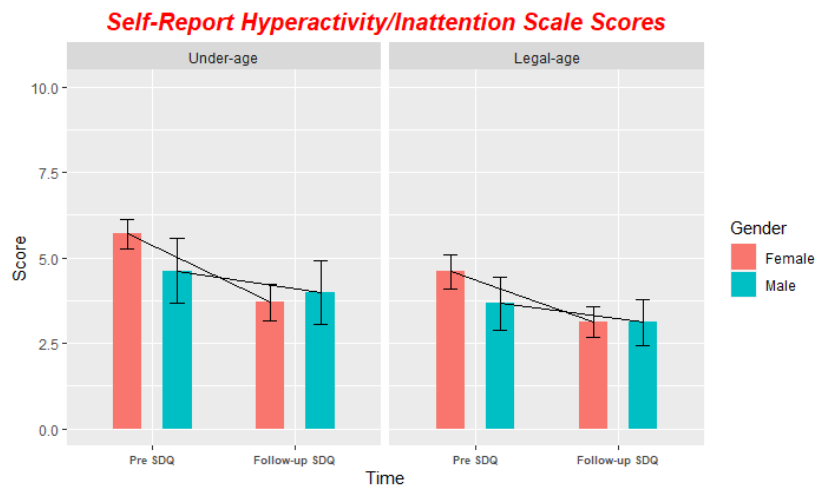
Furthermore, the relationship between the self-report and informant report for the conduct problems scale was analyzed using Spearman's Rank Correlation Coefficient test. The analysis revealed a coefficient of 0.71, indicating a robust and strong relationship between the variables.

- **Hyperactivity/Inattention Scale:**

A paired Wilcoxon signed-rank test was conducted to assess the hyperactivity/inattention scale in the before-after analysis using SDQ scores, resulting in a significant p-value ( $V = 985.5$ ,  $p < 0.001$ ). The mean score of the pre-SDQ was higher than that of the follow-up, indicating a decrease in the level of hyperactivity and inattention following the intervention (See *Table 30*).

As *Figure 6* illustrates, in both group and gender levels, the follow-up scales of SDQ indicate lower levels of peer hyperactivity / inattention levels compared to the pre-assessment scales. Notably, the Wilcoxon tests revealed significant differences among the groups. Specifically, the tests indicated significant differences for female adolescents in the under-age group ( $V = 158.5$ ,  $p\text{-value} = 0.001472$ ) and in the legal-age group ( $V = 195.5$ ,  $p\text{-value} = 0.005357$ ); whereas tests yielded not significant differences for male adolescents in the under-age ( $V = 6$ ,  $p\text{-value} = 0.1736$ ) and legal-age groups ( $V = 10.5$ ,  $p\text{-value} = 0.4962$ ).

## **Figure 6**



Furthermore, a paired Wilcoxon signed-rank test was conducted to assess the hyperactivity / inattention scale in the informant-report SDQ before and after the intervention. The analysis did not yield a significant p-value ( $V = 90.5$ ,  $p\text{-value} = 0.8705$ ), indicating that there was no statistically significant difference between the pre-SDQ and follow-up SDQ scores. Interestingly, according to parental reports, there was minimal change in the mean scores between the pre-intervention and follow-up versions of the SDQ (See *Table 31*).

The concordance between adolescents' self-report and the informants' report was assessed using the Wilcoxon signed-rank test, which yielded a significant p-value ( $V = 145$ ,  $p\text{-value} = 0.04408$ ). This suggests that there is a statistically significant difference between the self-report and informant report scores. Specifically, the mean score reported by parents was found to be lower than the mean score reported by the adolescents themselves. It suggests a discrepancy in the perception of hyperactivity/inattention between parents and adolescents, with parents perceiving their adolescents to have fewer difficulties in this domain (See *Table 32*).

To gain deeper insights into the nature of this association, Spearman's Rank Correlation analysis was conducted, revealing a coefficient of 0.34. This coefficient suggests a moderate positive correlation between the two sets of reports, highlighting that while there is some degree of alignment in the perception of hyperactivity/inattention between parents and adolescents, there are notable differences as well.

- Peer Relationship Problems Scale:

A paired Wilcoxon signed-rank test was performed to analyze the peer relationship problems scale in the before-after analysis using SDQ scores, yielding a significant p-value ( $V = 776$ ,  $p < 0.001$ ). The mean score of the pre-SDQ was higher than that of the follow-up, indicating a decrease in peer relationship problems following the intervention (See *Table 30*).

As Figure 7 illustrates, in both group and gender levels, the follow-up scales of SDQ indicate lower levels of peer problems compared to the pre-assessment scales. However, only for the female legal-age group Wilcoxon test yielded a significant p-value ( $V = 143.5$ ,  $p\text{-value} = 0.001474$ ), whereas for male legal-age ( $V = 17.5$ ,  $p\text{-value} = 0.1694$ ), under-age ( $V = 13$ ,  $p\text{-value} = 0.6662$ ) and for female under-age group ( $V = 80$ ,  $p\text{-value} = 0.2578$ ) the test yielded non significant results.

**Figure 7**



Furthermore, a paired Wilcoxon signed-rank test was conducted to evaluate the peer relationship problems scale in the informant-report SDQ before and after the intervention. The analysis yielded a significant p-value ( $V = 222$ ,  $p\text{-value} = 0.009825$ ), indicating a significant difference between the pre-SDQ and follow-up SDQ scores. According to parental reports, there was a reduction in the level of peer relationship problems, as evidenced by the decrease in mean scores between the pre-intervention and follow-up versions of the SDQ. This suggests an improvement in the adolescents' peer relationship functioning, as perceived by the parents, after the intervention (See Table 31).

The concordance between adolescents' self-report and the informants' report was examined using the Wilcoxon signed-rank test, which yielded a significant p-value ( $V = 97$ ,  $p\text{-value} = 0.005038$ ). Specifically, the mean score reported by parents was observed to be lower than the mean score reported by the adolescents themselves (See Table 32). This finding suggests a notable difference in the perception of peer relationship problems between parents and adolescents, with parents perceiving their adolescents to experience fewer difficulties in this domain.

Additionally, the association between the self-report and informant report for the peer relationship problems scale was examined using Spearman's Rank Correlation Coefficient. The analysis revealed a coefficient of 0.70, indicating a strong positive correlation between the two sets of reports. These results indicate that while there is a difference in the central tendency of the two groups' scores, the overall pattern of their relationship is still moderately consistent, which supports the notion that both parents and adolescents provide valuable insights into the adolescents' experiences in the realm of peer relationships.

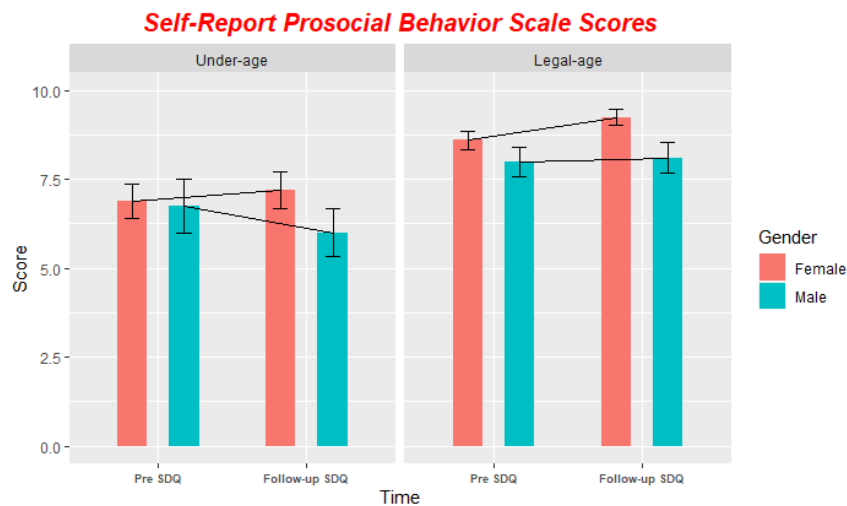
- **Prosocial Behavior Scale:**

A paired Wilcoxon signed-rank test was conducted to assess the prosocial behavior scale in the before-after analysis using SDQ scores. Although the test did not yield a significant  $p$ -value ( $V = 328$ ,  $p\text{-value} = 0.1085$ ), the mean score of the pre-SDQ was lower than that of the follow-up suggesting a potential increase in prosocial behavior in the follow-up, although not statistically significant (See *Table 30*).

*Figure 8* provides a visual representation of the findings, demonstrating that the follow-up scales of SDQ generally indicate higher levels of prosocial behavior compared to the pre-assessment scales in both group and gender levels. However, an exception was observed for under-age male adolescents, who exhibited lower levels of prosocial behavior after the intervention ( $M = 6$ ;  $SD = 1.92$ ) compared to their pre-intervention levels ( $M = 6.75$ ;  $SD = 2.18$ ), although the difference did not reach statistical significance.

The Wilcoxon tests further examined the differences and revealed significant results solely for female adolescents in the legal-age group ( $V = 33.5$ ,  $p\text{-value} = 0.03767$ ). Conversely, the Wilcoxon tests did not yield significant differences for both female adolescents in the under-age group ( $V = 24$ ,  $p\text{-value} = 0.2376$ ) and male adolescents in both the under-age group ( $V = 22$ ,  $p\text{-value} = 0.1883$ ) and legal-age group ( $V = 9$ ,  $p\text{-value} = 0.8241$ ).

**Figure 8**



Additionally, a paired Wilcoxon signed-rank test was conducted to evaluate the prosocial behavior scale in the informant-report SDQ before and after the intervention. The analysis yielded a significant p-value ( $V = 44.5$ ,  $p\text{-value} = 0.01322$ ), indicating a significant difference between the pre-SDQ and follow-up SDQ scores. According to parental reports, there was a positive change in the mean scores between the pre-intervention and follow-up versions of the SDQ, suggesting an improvement in the level of prosocial behavior following the intervention (See *Table 31*).

The concordance between adolescents' self-report and informants' report was assessed using the Wilcoxon signed-rank test, which yielded a significant p-value ( $V = 22.5$ ,  $p\text{-value} = 0.01055$ ). Specifically, parents reported a higher mean score for prosocial behavior compared to the mean score reported by adolescents themselves (See *Table 32*). This finding highlights that parents perceive their adolescents to exhibit more prosocial behavior than how adolescents perceive themselves.

Furthermore, the association between the self-report and informant report for the prosocial behavior scale was examined using Spearman's Rank Correlation Coefficient. The analysis revealed a coefficient of 0.31, suggesting limited concordance in how adolescents and informants perceive this aspect. These findings collectively suggest a considerable discrepancy in the perception of prosocial behavior between parents and adolescents.

- Total Difficulties Score:

A paired Wilcoxon signed-rank test was performed to analyze the total difficulties score in the before-after analysis using SDQ scores, resulting in a significant p-value ( $V = 1526$ ,  $p < 0.001$ ). The mean score of the pre-SDQ was higher than that of the follow-up indicating a decrease in overall difficulties following the intervention (See *Table 30*). As *Figure 9*

illustrates, in both group and gender levels, the follow-up scales of SDQ indicate lower levels of total difficulties scores compared to the pre-assessment levels. Notably, the Wilcoxon tests revealed significant differences for female adolescents in the under-age group ( $V = 164$ ,  $p\text{-value} = 0.005801$ ) and in the legal-age group ( $V = 231$ ,  $p < 0.001$ ). However, the Wilcoxon test for under-age ( $V = 27.5$ ,  $p\text{-value} = 0.2048$ ) and legal-age ( $V = 39$ ,  $p\text{-value} = 0.05758$ ) male adolescents did not yield a significant result.

**Figure 9**



Additionally, a paired Wilcoxon signed-rank test was conducted to evaluate the total difficulties score in the informant-report SDQ before and after the intervention. The analysis yielded a significant p-value ( $V = 204$ ,  $p\text{-value} = 0.04541$ ), indicating a significant difference between the pre-SDQ and follow-up SDQ scores. According to parental reports, there was a positive change in the mean scores between the pre-intervention and follow-up versions of the SDQ, suggesting a reduction in the total difficulties in the following the intervention (See *Table 31*).

The agreement between adolescents' self-report and informants' report was assessed using the Wilcoxon signed-rank test, which yielded a significant p-value ( $V = 143$ ,  $p\text{-value} = 0.001761$ ). Specifically, parents reported a lower mean score for total difficulties compared to the mean score reported by adolescents themselves (See *Table 32*). This finding suggests a notable difference in the perception of total difficulties between parents and adolescents, with parents perceiving their adolescents to have fewer overall difficulties than how adolescents perceive themselves.

Additionally, the association between the self-report and informant report for the total difficulties score was examined using Spearman's Rank Correlation Coefficient. The analysis revealed a coefficient of 0.55, indicating a moderate degree of concordance between the reports

provided by the adolescents and their informants regarding total difficulties. This suggests a reasonable level of similarity between the self-report and informant report scores for the total difficulties scale. Thus, while there may be a difference in the mean scores reported by parents and adolescents, there is still a moderate level of agreement in the overall trend of total difficulties as indicated by the correlation analysis.

- Impact Score

A paired Wilcoxon signed-rank test was performed to analyze the total difficulties score in the before-after analysis using SDQ scores, resulting in a significant p-value ( $V = 1167.5, p < 0.001$ ). The mean score of the pre-SDQ was higher than that of the follow-up indicating a decrease in overall difficulties following the intervention (See Table 30). As Figure 10 shows, in both group and gender levels, the follow-up scales of SDQ indicate lower levels of impact scores compared to the pre-assessment levels. Notably, the Wilcoxon tests revealed significant differences for female ( $V = 276, p < 0.001$ ) and male adolescents ( $V = 35, p\text{-value} = 0.02009$ ) in the legal-age group. However, the Wilcoxon test for under-age female ( $V = 83, p\text{-value} = 0.1982$ ) and male ( $V = 7, p\text{-value} = 1$ ) adolescents did not yield a significant result.

**Figure 10**



In addition, a paired Wilcoxon signed-rank test was conducted to assess the changes in the impact score of the informant-report SDQ before and after the intervention. The analysis revealed a significant p-value ( $V = 149.5, p < 0.001$ ), indicating a significant difference between the pre-SDQ and follow-up SDQ scores. According to informant reports, the impact of their adolescents' difficulties on their lives decreased compared to the initial assessment upon their arrival in UFDA) (See Table 31). However, it is noteworthy that the impact still remained at an abnormal level of 2.



The concordance between adolescents' self-report and informants' report was rigorously assessed using the Wilcoxon signed-rank test, yielding a non-significant p-value ( $V = 79.5$ ,  $p = 0.09374$ ). This result suggests that there is no substantial difference in the perception of impact between parents and adolescents (See *Table 32*).

To delve further into the strength and direction of this association, we investigated the relationship between the self-report and informant report for the impact score using Spearman's Rank Correlation Coefficient. The analysis revealed a coefficient of 0.60, indicating a moderate positive correlation between the self-report and informant report for the impact score.

### **4.3. Discussion**

This master's thesis aimed to investigate the effectiveness of the UFDA service based in Padua's LHU (AULSS6), in improving the psychological well-being of adolescents. The findings provide valuable insights into the specific areas of distress and challenges faced by the study population, highlighting the importance of targeted interventions and support systems in enhancing adolescent well-being.

The first objective of the present study was investigating the patient profile seeking help through UFDA; which included gathering data on age, gender, nationality, school attainment, motives for seeking help, and the impact of the pandemic on various aspects of life, such as changes in healthy habits, relationships with friends and family, feelings of loneliness, self-harming behaviors, and suicidal thoughts. In this regard, the findings of the regional questionnaire revealed important insights into the distribution of difficulties, the impact of the pandemic on individuals' lives, and key demographic characteristics. The completion rate of the regional questionnaire indicated a strong engagement from the sample, allowing for a representative understanding of the patient profile of UFDA. The majority of participants were female, with notable variations in educational status, highlighting the presence of high school students as the largest group. The questionnaire revealed the emotional difficulties as a primary area of concern, followed by mood-related challenges, family-related concerns, and school-related difficulties. Furthermore, the pandemic's impact on individuals' lives was evident, affecting life quality and giving rise to issues like excessive internet use and intrusive thoughts related to self-harm or suicide. The study also explored factors such as cyber-bullying, cyber-sex behaviors, and substance use. While the majority reported no involvement in negative behaviors, feelings of loneliness and reduced contact with friends were prevalent among participants. Lifestyle factors like diet and physical activity were also highlighted, showing a

decrease in physical activity during the pandemic. Overall, these findings contribute valuable insights into the specific areas of distress and challenges faced by adolescents seeking help in UFDA. The results provide a foundation for developing targeted interventions based on patient needs and support systems to enhance well-being in this phase of development.

The second objective consisted of evaluating whether UFDA has introduced improvements to the public mental health service for youth in terms of addressing specific patient needs through individualized therapeutic projects, and optimizing the duration of these interventions. This objective is evaluated based on the qualitative information provided in the coordination module by the UFDA operators. The findings revealed that parents were the primary source of referral to the UFDA, indicating their active involvement in seeking assistance for their adolescents. Other hospital departments and self-referrals also played significant roles, aligning with the UFDA's purpose of promoting accessibility and encouraging adolescents to contact the service when in need. Turning to the motives for seeking assistance among the participants, the results highlight the prevalence of anxiety, identity issues, and relationship problems as most common.

Nearly half of the patients faced short-term distress, while one year was the second most prevalent duration of distress suggesting that there is a notable number of individuals facing distress for a more extended period. Approximately half of the patients presented with slight severity, while the remaining half exhibited problematic severity. Moreover, the relatively low prevalence of severe cases is understandable, as these individuals are typically referred to more specialized services, aligning with the established inclusion criteria. Understanding these patterns was crucial to provide targeted support and interventions tailored to the specific needs of individuals seeking assistance.

The psychotherapy sessions for adolescents and parents, as displayed in *Table 22* and *Table 23*, respectively, adhere to a brief focused therapy program with a repeatable cycle of 10 sessions. The varying number of interview sessions for both groups indicates the treatment plan's flexibility, emphasizing its ability to be tailored to individual needs. Importantly, no therapeutic cycles exceeded 20 psychotherapy sessions, affirming the success of the brief-focused therapy approach.

Finally, the intervention outcome data indicated that the majority of cases have been concluded successfully. However, approximately 20% of participants voluntarily dropped out of the intervention, while around 13% were either sent to more appropriate services for their needs or temporarily suspended, awaiting re-engagement due to a temporary suspension of UFDA.

Our analysis of the Self-report version of the SDQ completed by under-age adolescents provides valuable insights into the psychological well-being and impact of difficulties within our sample. Compared to the established norms from the "Look@Me" Project, our participants displayed significantly higher scores in Emotional Symptoms, Conduct Problems, Hyperactivity/Inattention levels, Peer Relationship Problems, and Total Difficulties. Additionally, our sample exhibited significantly lower scores in the Prosocial Behavior Scale, indicating a relative deficit in this area compared to the general population. The impact scores from the questionnaire completed by male under-aged adolescents revealed significant effects of their problems on their daily functioning. In contrast, the impact profile for female under-age adolescents showed a more pronounced effect, indicating an abnormal impact on their lives due to their difficulties. These findings highlight the elevated levels of emotional and behavioral problems experienced by our sample, confirming the need for targeted interventions and support. Moreover, the significant impact of these difficulties on the lives of our participants underscores the importance of comprehensive assessment and appropriate intervention strategies to address their specific needs.

The examination of the differences in various subscales of the SDQ age adolescents revealed interesting findings regarding the influence of gender and age on different aspects of adolescent psychopathology. First, we did not find any interaction effect of age and gender together on any subscale or Total Difficulties score, which has been reported in literature by other studies (Brann et al., 2018b; Kawabe et al., 2021) we found a significant gender effect on the Total Difficulties, Emotional Symptoms and Prosocial Behavior Scales, with females reporting higher scores compared to males. The impact of gender on Total Difficulties Score is consistent with what is reported in the literature (Brann et al., 2018b; Yoon et al., 2022) and again for Emotional Symptoms scale (Kawabe et al., 2021). This gender difference was consistent across both age groups, suggesting that females may be more vulnerable to overall difficulties and emotional problems in particular and highlighting potential gender differences in prosocial behavior. These findings underscore the need to consider gender-specific factors when addressing the psychological well-being of adolescents. Second, neither age nor gender had a substantial influence on the Conduct Problems and Peer Relationship Problems scale scores, indicating that these issues may not differ significantly between under-age and legal-age adolescents or between males and females. Third, we observed significant age differences on the Hyperactivity/Inattention and Prosocial Behavior scales. Legal-age adolescents exhibited lower levels of Hyperactivity/Inattention compared to under-age adolescents, suggesting a potential reduction in these symptoms as individuals transition into legal

adulthood. This finding is also consistent with a longitudinal study that reported the reduction of Hyperactivity/Inattention Scores as individuals grow older (Wootton et al., 2022). On the other hand, legal-age adolescents demonstrated higher levels of prosocial behavior, indicating a positive developmental change in their social interactions. Fourth, a significant age effect on the Impact score was observed, with legal-age adolescents reporting a higher perceived impact of difficulties on their lives compared to under-age adolescents. This finding suggests that as individuals transition into legal adulthood, they may become more aware of the impact that their difficulties have on their daily functioning. Interestingly, this finding is consistent with the results reported by Brann et al. (Brann et al., 2018b). Overall, these findings contribute to a better understanding of the complexities of adolescent psychopathology, highlighting the influence of gender and age on Emotional Symptoms, Hyperactivity / Inattention levels, Prosocial Behavior, and overall difficulties and their perceived impact. These results underscore the importance of considering both gender and age factors when assessing and addressing the psychological well-being of adolescents. Further research is needed to elucidate the underlying mechanisms driving these differences and to inform targeted interventions for this vulnerable population.

Furthermore, our study aimed to assess the concordance between self-report data and informant reports on the SDQ subscales, emphasizing the importance of considering multiple perspectives when evaluating adolescent well-being. The concordance analysis revealed a moderate level of agreement between self-report and parent-report measures for most scales. However, certain areas, such as Emotional Symptoms, Hyperactivity/Inattention Scales, and Total Difficulties Score, exhibited notable discrepancies in the central tendency of scores between informants and self-reports, with the correlation between the reports remaining moderate to weak. The modest level of agreement between adolescents and parents is had been already reported in the literature (De Los Reyes et al., 2013, 2015). Particularly, parents tended to report fewer problems in these areas for their adolescents compared to what the adolescents themselves reported, which was also found by a recent study (Kawabe et al., 2021). These results highlight the necessity of understanding and acknowledging varying perspectives when assessing adolescent well-being. This information can be instrumental in guiding interventions and support systems that address the specific needs and challenges faced by adolescents, promoting their overall well-being.

Regarding the analysis of SDQ scores before and after the intervention at UFDA, significant positive outcomes have been observed. Specifically, based on self-reports, the intervention yielded a significant positive impact, leading to reductions in all scale scores,

except for Prosocial Behavior Scale scores, which, although not reaching statistical significance, exhibited an elevation compared to pre-intervention levels, indicating a certain level of improvement.

While parents also reported a perceived decrease in these areas, the difference reached statistical significance only for the Peer Relationship Problems, Prosocial Behavior scale, Total Difficulties, and Impact scores. Although parents reported lower scores in Emotional Problems, Conduct Problems, and Hyperactivity/Inattention scales following the intervention, these differences did not reach statistical significance.

Regarding the concordance levels between self-report data and informant reports on the follow-up version of SDQ scales, it was found that parents agreed with their adolescents only for their Conduct Problems and Impact Score. However, for all the other scales, parents reported lower central tendency scores compared to adolescents. These findings suggest that even after the intervention, and with a smaller sample size, parents had a relatively lower perception of the problems their adolescents were reporting. Despite this, there was a moderate to high level of agreement between adolescents' self-report and informant reports for all subscales, with correlation coefficients higher than the pre-intervention phase. However, this agreement might be influenced by the dramatic fall in the sample size after the intervention, which could introduce bias when comparing to pre-intervention scores.

Overall, these findings highlight the effectiveness of the intervention in reducing overall difficulties and emphasize the importance of considering both self-report and informant report perspectives when assessing the difficulties of adolescents. Integrating multiple perspectives can provide a more comprehensive understanding of an adolescent's well-being and aid in tailoring effective interventions to address their specific needs.

#### **4.4 Conclusions**

In conclusion, this study offers valuable insights into the effectiveness of the intervention program in addressing the difficulties and enhancing the well-being of adolescents. The targeted interventions, consideration of age-specific factors, and integration of multiple perspectives in addressing adolescent mental health have proven to be instrumental in achieving positive outcomes.

The first objective, aimed at investigating the patient profile seeking help through UFDA, has been successfully fulfilled through a comprehensive patient profiling. This analysis

highlighted the key demographic characteristics of the patient profile, the distribution of their difficulties, and the pandemic's impact on their lives.

The second objective, which focused on evaluating the improvements introduced by UFDA to the public mental health service for youth, demonstrated the success of the multi-professional and youth-centered approach. Despite the constraints of a limited number of psychotherapy sessions, positive outcomes were reported by the operators. The coordination module yielded critical information highlighting the successful accessibility of UFDA for adolescents, as evidenced by the high self-referral rates and a significant number of over 420 patients seeking support in the service over an 8-month period. The module also highlighted the duration and severity of distress experienced by patients, allowing for the activation of individualized therapeutic projects and optimizing the intervention's duration. The success of the brief-focused therapy approach, with no therapeutic cycles exceeding 20 psychotherapy sessions, further affirmed the efficacy of the interventions. Additionally, the intervention outcome data indicated that the majority of cases were successfully concluded, sent or suspended due to a temporary suspension of UFDA and are awaiting re-engagement, although some drop-outs were noted.

The third objective, focused on evaluating UFDA interventions in terms of promotion of psychological well-being and the long-term sustainability of these improvements, was satisfied through the improvements observed in almost all scales of the SDQ following the intervention. The study also examined the agreement between parents and adolescents, unveiling a moderate to low association between their reports and concordance observed only for a few subscales, both on the pre and follow-up versions of SDQ. These findings align with existing literature on the subject. (De Los Reyes et al., 2013, 2015; Kawabe et al., 2021)

In response to the concerning increase in hospitalization rates of young people in the Veneto Region during the pandemic, UFDA was established with a primary focus on fostering a culture of prevention rather than intervention, aiming to provide timely and targeted interventions for adolescents in distress. Its' crucial role as an interface between health and social-health domains enables the implementation of proactive measures to address mental health issues at an early stage. By doing so, UFDA seeks to effectively reduce hospitalization rates, prevent relapse, and minimize the length of stay for adolescents, thus ensuring better outcomes for their well-being and overall mental health. Being a specialized unit of care for adolescents, coupled with its' user-friendly setting and direct contact availability for adolescents enables seamless access to care for adolescents in distress.

Moreover, UFDA addresses the issue of continuity of care, which had previously resulted in significant drop-out rates due to the age criteria division between CAMHS and AMHS. By serving as a bridge between territorial services, UFDA effectively fills the treatment gap and ensures that even adolescents who fall outside the age criteria are referred to the appropriate service of care. This proactive approach successfully overcomes any challenge related to health-care transition processes and mitigates the stigma associated with facilities catering to severe adult patients with chronic disorders.

Through this strategic intervention, UFDA ensures that adolescents receive continuous and seamless care, preventing any dispersion in their treatment journey. By guiding them towards the most suitable service of care, UFDA optimizes resources, facilitates timely interventions, and promotes a more streamlined and effective mental health support system for young individuals in distress.

These insights are invaluable for informing evidence-based interventions and support systems tailored to the specific needs of adolescents, thereby promoting their overall well-being. Continued efforts in this direction will contribute to the advancement of adolescent mental health care and the creation of effective and sustainable intervention models.

#### **4.5. Limitations and Future Improvements**

The comprehensive assessment undertaken in this study, encompassing various aspects of mental health and well-being, offers a holistic understanding of the challenges encountered by adolescents seeking help in UFDA. The longitudinal design and robust statistical analysis applied in the study enhance the reliability and contribute valuable insights to the field.

However, it is crucial to acknowledge several limitations. The small sample size and reliance solely on self-report measures may restrict the generalizability of the findings. The absence of a control group and the failure to account for potential confounding variables limit the establishment of causal relationships. Moreover, the noteworthy rate of interrupted cases reported in the coordination module necessitates further investigation to elucidate the underlying reasons for these occurrences. Additionally, the study recognizes the presence of incomplete data stemming from drop-out rates and suboptimal collaboration from operators in data collection. Addressing these issues is paramount as the pilot phase of UFDA plays a pivotal role in gathering essential data for epidemiological analysis, monitoring, and service evaluation. This data can serve as a foundation for implementing a replicable model in other health districts, catering to the unmet needs of adolescents in psychological distress, not only

during the COVID-19 pandemic but also in the future. These factors may impede a comprehensive understanding of patient experiences and intervention outcomes.

For the rest of the experimental phase of UFDA, it is imperative to accumulate more data and conduct qualitative analyses to uncover the motives behind drop-outs and achieve a better profiling of patients into severity categories. This profiling is essential for the accurate assignment of individualized therapeutic projects. Currently, the UFDA mental health service is not fully operational due to ongoing reorganization, resulting in a temporary suspension of its primary activities. Future research should diligently address these limitations by adopting larger sample sizes, incorporating control groups, and adequately accounting for potential confounding factors. By employing more robust methodologies, the investigation can attain greater credibility and facilitate a deeper comprehension of the effectiveness of the UFDA intervention program.

In summary, while the current study provides valuable insights into the mental health challenges faced by adolescents and the effectiveness of UFDA interventions, addressing the outlined limitations and conducting further research with enhanced methodologies will significantly enhance the field's knowledge and contribute to the continued improvement of mental health services for adolescents.



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