

**THE EFFECT ON ADOLESCENTS WITH ADHD OF PROLONGED  
EXPOSURE TO MISSILE FIRE OR SECURITY THREATS:  
PURPOSES AND HYPOTHESES**

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***Abstract:** For twenty years, the population of south-western Israel has been living under threat of missile fire from militant Palestinian organizations in Gaza. The purpose of this study is to determine: A) If prolonged exposure to missile fire or security threats (PEM-FST) has an impact on the emotional, behavioral, problem-solving strategies and social characteristics of adolescents; and B) Whether adolescents who have been diagnosed with ADHD and who have been subjected to these conditions are affected differently than adolescents living under the same circumstances who do not have an ADHD diagnosis.*

***Key words:** ‘Otef Aza’- Israel (OAI), prolonged exposure to missile fire, ADHD (Attention Deficit Hyperactivity Disorder), emotional /behavioral problems, coping strategies.*

## **Introduction**

Since 2000, the population in southern Israel bordering the Gaza Strip has been subjected to rocket and missile fire from Palestinian militants. As a result, residents of the northern and western Negev live in a continual state of trauma. This life-threatening reality has placed a significant emotional toll upon both children and adults (Eilon & Lahad, 2000).

A comprehensive longitudinal study of the emotional state and mental health of children, adolescents, and adults in 'Otef Aza' - Israel (OAI), as the region along the Gaza Strip is called in Hebrew (Solomon et al., 2017) reveals that this population has increasingly developed symptoms of stress, distress and morbidity and has required psycho-social assistance. Nutman-Schwartz and Lavi (2014) find a connection between the intensity of exposure to danger and the intensity of traumatic symptoms. Every additional round of fighting in the region has expanded the level of anxiety among children and teens.

While people living in situations of continual stress tend to develop a worldview that regards the world as hostile, residents in these zones who do acclimate to the prolonged threat are able to maintain daily routines and disengage from current events. It has also been found that continual exposure to traumatic events produces a positive dynamic that fosters a sense of closeness to others in the same situation, a sense of self-efficacy, a sense of new possibilities, greater appreciation of life and other spiritual changes.

## **Target population and participant selection**

The target population for the present study are adolescent boys and girls, 12-13 years of age and one of their parents in Israel.

## **Participants**

A total of 364 individuals, 182 adolescents, ages 12-13, and 182 parents registered for the survey; however, just 322 completed the entire questionnaire and were included in the subsequent analysis. This group was divided into 161 parents who completed the Child Behavior Checklist questionnaire (CBCL/6-18; Achenbach, 2001) and 161 adolescents who completed three different questionnaires: the Adolescent Coping Scale (ACS; Frydenberg & Lewis, 1993a, 1993b), State Trait Anxiety Inventory (STAI; Spielberger et al., 1970) and the Mood Adjective Checklist (MACL; Nowlis, 1965).

## **The research questions – Hypotheses testing**

This section presents the hypotheses that were tested: Four research questions and twelve accompanying hypotheses.

[Research question (RQ), hypotheses (H)]

### **RQ1.A1: To what extent does an ADHD diagnosis impact emotional or behavioral problems of adolescents as reported by their parents?**

HA2: An ADHD diagnosis will not have a statistically significant effect on the emotional or behavioral problems of adolescents.

HA3: An ADHD diagnosis will have a statistically significant effect on the emotional or behavioral problems of adolescents.

### **RQB1: To what extent does prolonged exposure to missile fire or security threats impact the emotional or behavioral problems of adolescents?**

HB2: Prolonged exposure to missile fire or security threats will not have a statistically significant effect on adolescents' emotional or behavioral problems.

HB3: Prolonged exposure to missile fire or security threats will have a statistically significant effect on adolescents' emotional or behavioral problems.

**RQC1: To what extent do interactions between PEM-FST and an ADHD diagnosis impact emotional or behavioral problems of adolescents as reported by their parents?**

HC2: The interaction between PEM-FST and ADHD diagnosis will not have a statistically significant effect on the emotional or behavioral problems of adolescents.

HC3: The interaction between PEM-FST and ADHD diagnosis will have a statistically significant effect on the emotional or behavioral problems of adolescents.

**RQ2.A1: To what extent does an ADHD diagnosis impact adolescents' self-reporting of their coping strategies?**

HA2: ADHD diagnosis will not have a statistically significant effect on adolescents' coping strategies.

HA3: ADHD diagnosis will have a statistically significant effect on adolescents' coping strategies.

**RQB1: To what extent does prolonged exposure to missile fire or security threats impact adolescents' self-reporting of their coping strategies?**

HB2: Prolonged exposure to missile fire or security threats will not have a statistically significant effect on adolescents' coping strategies.

HB3: Prolong exposure to missile fire or security threat will have statistically significant effect on adolescents' coping strategies.

**RQC1: To what extent do the interactions between PEM-FST and an ADHD diagnosis impact adolescents' self-reporting of their coping strategies?**

HC2: The interaction between PEM-FST and an ADHD diagnosis will not have a statistically significant effect on adolescents' coping strategies.

HC3: The interaction between PEM-FST and ADHD diagnosis will have a statistically significant effect on adolescents' coping strategies.

**RQ3.A1: To what extent does an ADHD diagnosis impact adolescents' self-reported anxiety levels?**

HA2: An ADHD diagnosis will not have a statistically significant effect on adolescents' anxiety levels.

HA3: An ADHD diagnosis will have a statistically significant effect on adolescents' anxiety levels.

**RQB1: To what extent does prolonged exposure to missile fire or security threats impact adolescents' self-reported anxiety levels?**

HB2: Prolonged exposure to missile fire or security threats will not have a statistically significant effect on adolescents' self-reported anxiety levels.

HB3: Prolonged exposure to missile fire or security threats will have a statistically significant effect on adolescents' self-reported anxiety levels.

**RQC1: To what extent does the interaction of PEM-FST and an ADHD diagnosis impact adolescents' self-reported anxiety levels?**

HC2: The interaction between PEM-FST and an ADHD diagnosis will not have a statistically significant effect on adolescents' self-reported anxiety levels.

HC3: The interaction between PEM-FST and an ADHD diagnosis will have a statistically significant effect on adolescents' self-reported anxiety levels.

**RQ4.A1: To what extent does an ADHD diagnosis impact adolescents' self-reported mood?**

HA2: An ADHD diagnosis will not have a statistically significant effect on adolescents' self-reported mood.

HA3: An ADHD diagnosis will have a statistically significant effect on adolescents' self-reported mood.

**RQB1: To what extent does prolonged exposure to missile fire or security threats impact adolescents' self-reported mood?**

HB2: Prolonged exposure to missile fire or security threats will not have a statistically significant effect on adolescents' self-reported mood.

HB3: Prolonged exposure to missile fire or security threats will have a statistically significant effect on adolescents' self-reported mood.

**RQC1: To what extent does the interaction of PEM-FST and an ADHD diagnosis impact adolescents' self-reported mood?**

HC2: The interaction between PEM-FST and an ADHD diagnosis will not have a statistically significant effect on adolescents' self-reported mood.

HC3: The interaction between PEM-FST and an ADHD diagnosis will have a statistically significant effect on adolescents' self-reported mood.

**Main points of reference from previous studies on what constitutes Attention Deficit Hyperactivity Disorder (ADHD)**

### **Definition and characteristics of ADHD**

Attention Deficit Hyperactivity Disorder (ADHD) first appeared in the DSM<sup>1</sup> in 1952. The current edition, the DSM-5 published in 2013 defines ADHD in the chapter 'Neurodevelopmental disorders' and stresses the correlation between cerebral development and the existence of ADHD.

Over the years the basic diagnostic criteria for ADHD have not changed. They include 18 symptoms divided into two groups, inattention and inattention combined with impulsivity/hyperactivity. In order receive a diagnosis of ADHD at

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<sup>1</sup> The Diagnostic and Statistical Manual of Mental Disorders (DSM) is published by the American Psychiatric Association (APA) as a guide for diagnosis of psychiatric illnesses in the attempt to create professional uniformity among psychiatrists, psychologists, social workers, nursing professionals and other mental health care providers. The DSM also contributes to professional uniformity in the fields of research, health policy, education, insurance and compensation and the legal system.

least six symptoms from either of the two groups (or from both) are required. Several prominent changes have been made in the DSM-5 as listed below.

### **Etiology of ADHD**

Barkley (1998) notes that ADHD is a developmental defect that affects self-control. Comprised of many elements, it involves issues of attention span, impulse control (impulsivity), and heightened levels of activity (hyperactivity). The DSM concludes that ADHD is a result of genetic factors.

ADHD tends to present at a young age, with the first symptoms usually appearing before age seven. It is prevalent mostly in boys (DuPaul & Stoner, 2003). This disorder manifests in two forms: Uncontrolled, impulsive behavior (called impulsive/hyperactive behavior) and attention problems consisting of short memory span and learning disabilities. Both forms are usually present in most children but not universally.

Children with ADHD have difficulties in fully absorbing information and identifying the main ideas of a text. There is difficulty with planning, self-control, persistence, memory, impulse control, maintenance of priorities, foreseeing outcomes, and social adaptation. All of these symptoms impair educational functioning. Some children with ADHD have specific learning disabilities in addition, most commonly with reading, writing, mathematics, and linguistics.

Chesner (2005) claims that children with ADHD and learning disabilities have negative thoughts about themselves and their environment that are created by the constant friction with their surroundings. These destructive self-thoughts are a catalyst for detrimental emotional and behavioral problems.

Epidemiological data show that approximately 3-7% of children in the US have an ADHD diagnosis (DuPaul and Stoner, 2003). It is common worldwide in about 5-10% of all school-age children up to the age of twelve.

Eighty percent of these children continue to suffer from the disorder throughout adolescence and adulthood. About 7-10% of the world population has Attention Deficit Disorder (ADD). This condition does not diminish with age and continues to affect people throughout their entire lives (DuPaul & Stoner, 2003). Barkley (1997a, 1997b) contends that ADHD develops due to hyperactivity in the area of the brain that controls behavioral inhibition, self-organization skills, self-coordination and the ability to think ahead.

Research on the etiology of ADHD indicates that it most likely results from a combination of genetic, neurobiological, psychological, and contextual risk factors (Coghill et al., 2008; Monuteaux & Faraone, 2008; Nigg, 2007; Steinberg & Drabick, 2015; Thapar et al., 2007). Moreover, ADHD is associated with negative correlates and outcomes among children, such as academic difficulties, problems with peer relationships, and family conflict (Deault, 2010; Hinshaw & Lee, 2003; Johnston & Mash, 2001; Mrug et al., 2007).

Research has consistently shown high correlation between ADHD and Oppositional Defiant Disorder or Conduct disorder (ODD/CD) (Costello et al., 2003), disorders that commonly occur along with ADHD (Bubier & Drabick, 2009; Jarret & Ollendick, 2008; Ollendick & Seligman, 2006). It has been estimated that up to one-third of children with ADHD have comorbid anxiety disorders (Blackman et al., 2005; Tsang et al., 2012). According to DuPaul and Stoner (2003), ODD manifests itself as defiance of authority figures, lack of anger management abilities, argumentativeness, and verbal hostility.

People with ADHD focus on the 'here and now' and do not consider the possible damage that might occur as a result of specific actions or outcomes. This creates difficulties for others who need to respond to the aforementioned behavior. Because of this inability to foresee the implications of their behavior, people with ADHD live from crisis to crisis.



Olazagasti et al. (2012) point out that children and adolescents with ADHD have more accidents that require medical attention and that they are more involved in risk-taking behavior than peers who do not suffer from ADHD.

### **Anxiety disorder and Post-Traumatic Stress Disorder (PTSD)**

Colleen (2013) claims that an anxiety disorder is a form of a mental illness that causes people to feel discomfort and distress. He also notes that prolonged anxiety can disrupt quality of life, and therefore, recommends seeking treatment because therapeutic and medicinal remedies can improve a patient's condition. Since there are many anxiety disorders and they differ from person to person, the treatment program must be personalized for each patient.

Kaplan and Kaplan (2010) assert that anxiety is a natural response to protect oneself from danger in situations of emergency. One who has not experienced anxiety will not survive, as that person will not exhibit caution in situations of danger. Experiencing a stressful period, one may conceive that the stress is higher than the ability to cope.

Sagi (2010) differentiates between two types of anxiety. The first, acute anxiety occurs during a time of war where feelings of fear and uncertainty are common to everyone. The second, chronic anxiety is characteristic of individual situations in which there is constant pressure derived from rough living conditions, isolation, etc. Sagi (2010) states that children and teens exposed to continuous war are at high risk of suffering depression, behavioral problems, functional disorders, or other psychiatric phenomena related to stress.

Children and adolescents are especially vulnerable to traumatic events such as war or terrorist attacks.

They are likely to develop Post-Traumatic Stress Disorder (PTSD): Re-experiencing intrusive thoughts, avoidance, arousal (Barenbaum et al., 2004; Garbarino, 2001) and developing somatic complaints such as headaches, stomach-aches, fatigue, attention difficulties, or behavior problems (Vogel & Vernberg, 1993). Adolescents living through war or in zones of violent conflict report lower levels of psychological distress than young children in reaction to their traumatic experiences (Allen, 1998). This is due to their more developed cognitive capacities and coping resources (Barenbaum et al., 2004; Masten & Coatsworth, 1998). However, adolescents are likely to repress their feelings and therefore tend to develop depression, moodiness, withdrawal, defiance, or risk-taking behavior (Joshi & O'Donnell, 2003).

### **Problem-Solving Strategies in Adolescents**

Frydenberg & Lewis (1997) find that coping strategies can be best be grouped into three styles representing functional and dysfunctional aspects of coping (Cox et al., 1988, as cited in Frydenberg & Lewis, 1997; Frydenberg & Lewis, 1991, as cited in Frydenberg & Lewis, 1997; Seiffge-Krenke & Shulman, 1990, as cited in Frydenberg & Lewis, 1997). The three modes of coping identified by Seiffge-Krenke include active coping, internal coping, and withdrawal. The last includes defenses such as denial or repression that entail fatalistic attitudes. While withdrawal can be regarded as 'purposeful,' it generally means that the problem is not solved.

### **Coping through emotional approach**

Pat-Horenczyk et al. (2006) believe that coping consists of behavioral and cognitive efforts to manage the person-environment relationship. Lazarus and colleagues (Folkman & Lazarus, 1988) carried out seminal work in this regard.

Adolescents report a wide variety of coping strategies to deal with the threat of ongoing terrorist attacks. Most frequently they deal with this stressful situation by making time for leisure activities, or spending more time with friends. Problem-focused coping is most commonly used as is reference to others (Braun-Lewensohn et al., 2010).

### **How to increase resilience**

Allen (1998) states that the existence of protective factors enhances healthy development and prevents the negative effects of the highly stressful situations.

Resilience results from complex interactions between a child and the environment (Garbarino, 2001; Masten & Coatsworth, 1998, Pfefferbaum et al., 2008 ).

positive emotional ties with parents' support and support from meaningful others (De Jong, 2002; Garbarino, 2001; Garmezy et al., 1984) or from peers (Almquist & Broberg, 1999; Masten & Coatsworth, 1998). Those are being considered essential in fostering resilience to traumatic stress.

Social sharing of traumatic experiences is considered an aspect of social support that reduces psychological distress (Pennebaker, 1995; Vernberg et al., 1995). Springer & Padgett (2010) and Windle (1994) found a positive association between the amount of social sharing and psychological distress.

### **Summary**

The literature reflects the complexity of problems faced by a child/adolescent with ADHD who is functioning under the constant pressure of war, disaster, or an ongoing crisis. It references the coping strategies and difficulties experienced by children/adolescents in similar situations who do not have ADHD.

In residential areas of OAI, children are born into the reality of missile fire, fear, anxiety, insecurity, uncertainty, and surprising events that disrupt the routine of life. In this study we investigate how a years' long threatening situation affects all children and adolescents and comparing those with ADHD to those without ADHD.

All hypotheses presented at the beginning of this article will be examined in depth and will be presented later in another article that will include the results of the study. The results of the research may impact education systems, social, psychological and health support systems that aim to promote resilience in children living in stressful situations, especially those with ADHD.

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