

**Riding in the Right Direction: examining risk and resilience in high risk Israeli youth
involved in a sports intervention**

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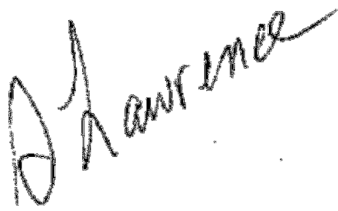
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Revised submission for PhD in Public Health – May 2012

Declaration of Authorship

I, Susan Lawrence, hereby declare that this thesis and the work presented in it is entirely my own. Where I have consulted the work of others is clearly stated.

Signed:

A handwritten signature in black ink, appearing to read "S. Lawrence", written in a cursive style.

Date: July 26, 2011

Abstract

Riding in the Right Direction: examining risk and resilience in high risk Israeli youth involved in a sports intervention

This project studied 108 Israeli youth of mixed gender, aged 12-16 (mean 12.8, SD 1.67), selected for risk, with a 3 to 1 ratio of boys to girls. It included a group given a sports intervention and a comparison group. It utilised a broad psychosocial approach to investigate risks for psychological disorder and the impact of an intervention, based on both an Ecological and Attachment theoretical approach to inform identification of risk and resilience factors in a society used to political conflict.

Aims: i) to examine psychosocial risks for psychological disorder in both groups and (ii) to examine the impact of a sports intervention in reducing risk and symptoms and increasing resilience.

Method: The two phased prospective study included 60 young people referred by social services to a cycling intervention and 48 to a comparison group. Phase 1 examined demographic characteristics and psychosocial risks in the combined groups in relation to behavioural, emotional and post traumatic symptoms. Phase 2 examined change after 9 months comparing the two groups. Standardised self-report questionnaires were used, with focus groups and qualitative interviews to establish intervention impact. Questionnaires were translated into Hebrew and Arabic, with focus groups held in the local languages and subsequently translated and interviews with coaches held in English.

Results: Twenty-three percent of all the youth reported a behavioral or emotional disorder at case level, with 33% having symptomatology at borderline level. Risk factors for such disorder were deprivation, insecure attachment style, peer problems and affectionless control in childhood from mothers or fathers. Poor peer relationships mediated between childhood experience and disorder. Over half had exposure to a traumatic event and there was a high prevalence of partial Post Traumatic Stress Disorder (PTSD): 31% and 6% with full disorder. Life events, trauma experience, ethnicity and deprivation associations provided evidence of a social and Ecological interpretation of findings. Childhood experience, insecure attachment style and peer relationships supported an Attachment perspective.

Findings at follow-up showed positive effects of the cycling intervention through decreased self-esteem and symptoms for both Conduct disorder and PTSD. There was also increased support for those in the intervention. However, follow-up findings were limited by high attrition rates. Analysis of focus groups and interviews led to a descriptive model showing benefits of the intervention through agentic (skills, discipline), escapist and aesthetic (fun) aspects.

Conclusion: Findings are discussed in relation to Israeli culture and post-conflict context on youth risk and disorder, and the use of similar interventions in other post-conflict zones.

Dedication and Acknowledgments

This thesis is dedicated to the young people involved in the study.

This thesis survived one wedding, one pregnancy, breast cancer, 4 surgeries, and 3 international moves. It could not have been done without the following people's support: Professor Antonia Bifulco who guided me with never ending patience; Hedy Wax and Samer Mouallem of One to One Israel; Kristof & Elona; Joyce, Mimi & Jan, Sandra, Gerry, Frank, Laura, Jolene, Sherrill, Donna, Lena, Tena, Marianne, Ann, Marit, Walter & Joke.

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Chapter 1 Introduction

1.1 Introduction

This study is an investigation of mental health and associated psychosocial risk and resilience factors in adolescents in Israeli Arab and Jewish communities, living in the context of political violence and conflict. It examines the impact of a sports intervention on reducing risk and psychological disorder, and improving wellbeing. It thus tackles a major public health issue around adolescent disorder and trauma in conflict zones. A broad psychosocial approach is utilised, to include the adolescent's report of their family, peers, and social environment, as well as their psychological characteristics and childhood experience. These are framed by both an Ecological and Attachment theoretical model to inform the identification of risk and resilience factors, their inter-relationship and association with disorder. A range of disorders are covered, those prevalent in teenagers years and those rare but more common in conflict zones.

This first chapter outlines the background to the thesis and reasons for the chosen location, provides a theoretical basis for the study, defines risk and resilience in relation to psychological disorder in adolescence and outlines the opportunities for evaluating a sports intervention in Israel. The second chapter will define the disorders studied and review the research literature relevant to the study as well as introducing the study aims and research questions. Chapter three describes the study design, participants, measures and procedures used. The results are then presented in three stages: chapter four presents findings from the first phase, the cross-sectional analysis of the youth, chapter five provides data from second phase examining the impact of the sports intervention prospectively, and chapter six presents findings also from the second phase, a qualitative analysis of focus groups and interviews with those involved in the sports intervention. Chapter seven discusses the findings from the thesis, links these back to the literature covered and

identified both the limitations and contributions of the study to current knowledge of adolescent mental health.

1.2 Background

It is widely acknowledged that social conflict and political violence has widespread mental health consequences for the population. The extent of these consequences varies by individual even though common conditions may apply across groups of people and at different life-stages. Associated with such conflict are traumatic events (for example around violence, bombing, witnessing attacks) which may be experienced by most involved as a post-traumatic syndrome, widespread immediately after an incident. However, whether such incidents result in longer term psychopathology is dependent upon numerous risk factors, and only affects a smaller proportion of the population. Availability of social support, access to medical and psychological support, resumption of normal activities and return to normality allow many to overcome the traumatic events (Eisenbruch, de Jong, & van de Put, 2004; Jordans, Tol, Komproe, & De Jong, 2009). For the vulnerable minority, psychological interventions are required to assist with recovery. This involves emotional, behaviour and post-traumatic stress disorders. Since young people appear particularly vulnerable, and because damage to development can lead to long term negative consequences, interventions for adolescents are seen as particularly important. An important type of intervention which is often welcomed by young people is that of sports programs, used with young people to improve coping skills, support, self-esteem and wellbeing, and it is feasible to set these up in conflict settings (Robert Henley, Schweizer, de Gara, & Vetter, 2007). However very little empirical evidence exists to determine what, if any positive benefits these programs have for the participants. This is the focus of the study reported here.

The wider purpose of this study is to examine experiences that relate to psychological disorder in Israeli youth across Jewish and Arab communities, and then identify elements improved in relation to a local sports intervention.

Thus, the study will examine adolescent psychosocial risk factors, resilience factors, a range of psychological disorders and wellbeing and examine these prospectively in relation to involvement in a sports program. This will potentially inform other such interventions planned in similar conflict locations internationally.

The motivation for the investigation arose from a general interest in adolescent mental health, developed during nursing work in Canada followed by health research in Turkey. The latter focused on the influence to public health of global tobacco in underdeveloped countries. This was combined with a personal interest in coaching adolescents living in deprived parts of London in athletics and involvement in the literature on the benefits of international sports programs. This showed a proliferation of sports programs for youth in conflict zones as well as in low income countries. Many of the programs were not outcome specific, nor were they necessarily focused on alleviating psychological disorder, but instead focused on pleasurable activity as a distraction from hazards of daily life. However, it seemed worthwhile to consider whether such sports interventions may also help in reduction of psychological disorder for affected youth. Whilst the original intention had been to study young people in any country in conflict (for example links were made with a Lebanese group doing similar work in a refugee camp), an opportunity arose to work in Israel given an existing sports programme.

Israel was also considered appropriate because the war with Lebanon in 2006 occurred around the time this thesis was being planned therefore constituting a political conflict location for the young people living there, with the expectation of high rates of trauma experience. The war involved bombardment with kassam rockets in northern Israel for several weeks (Urquhart, 2007). Continued air-strikes, and economic blockades and the launch of missile attacks against Israeli citizens continued during the ground work of this study in 2007, across Israel (Tessler & Grant, 1998). Even though such high level of conflict did not extend during the whole period of the study, the perception of possible escalation and the daily reporting of conflict in the

media served to maintain a high awareness of political conflict and potential trauma in the minds of the population.

As well as selecting Israel as an important conflict zone for examining increased trauma experience, the other reason relates to the presence of deprivation, known to relate to higher rates of psychological disorder in individuals and families. Thus the experience of disadvantage in the Arab population has been argued to be due to institutionalized discrimination in public services and resources such as housing, education, and health care (Tessler & Grant, 1998). Policies which have favoured expanding the Jewish population at the expense of other populations have entailed loss of housing, employment and dislocation of many Arab families (Tessler & Grant, 1998). Thus the Arab population, which comprises almost 20% of the entire Israeli population, has higher unemployment, less highly trained and educated people with many not have sufficient income to cover basic necessities such as food, shelter and essential services (Alfandari, 2005). Illiteracy is higher which further enhances isolation from needed services and many are under-served in terms of health care, education, and basic services (The Galilee Society: The Arab National Society for Health Research, 2007). The socio-economic gap means a higher disease burden, including higher rates of psychological disorder including depression, and anxiety in Arab populations (Farbstein et al., 2010). There is recognition by the Israeli government of the causal link between socio-economic status and mental health, that mental health resources tend to be focused on demand rather than need, with a large percentage of the population being under-served (Levav & Lachman, 2005). Being able to study the effects of both deprivation and trauma in Arab as well as Jewish youth adds an additional dimension to the social aspects of the study. Also, whilst the Jewish population at large does not face such endemic discrimination, a proportion of the population continues to face familial instability, poverty, stress and trauma experience in common with world-wide increases in violence, family instability and mental health problems. These factors comprise another layer of risk for the adolescents living in Israel of both communities. Although there has been a body of research on the mental health effects of the political and social situation on the Israeli population few

studies have separated out the Arab from Jewish sub populations in their findings, choosing to present the findings on Israeli as a homogenous group (Pat-Horenczyk, 2005a, 2007; Pat-Horenczyk, Schiff, & Doppelt, 2006; Schiff, Zweig, Benbenishty, & Hasin, 2007). This study aims to compare impacts of both politically based violence, as well as more personal and familial risk factors on young people in the two communities in comparison.

1.3 Local sports intervention: ‘One to One’

Israel was also chosen as the research site in part because of an opportunity from One to One Israel, a charity organization providing sports programs to disadvantaged youth across Israel. The charity is committed to co-existence of disparate communities in the middle-east, and elsewhere and provides interventions to aid in the wellbeing of young people in such communities. It therefore funds much needed community-based programs to disadvantaged children and adolescents living in Israel. The mental health needs of traumatised and at risk children in Israel often falls to nongovernmental organizations or services to address need, and are contracted out by the Department of Welfare to address these issues.

One to One Children’s Fund¹ mission states that it:

“exists to support social and educational projects all over the world, relieving suffering, hardship and neglect wherever they arise and to help children overcome the trauma of war, prejudice and natural disaster”

In Israel, One to One facilitates and funds a variety of programs for at risk children, disabled children and also runs co-existence programs for children as well as training professionals and community volunteers to work in such programmes, always across religious and ethnic divides. Thus a link was made with the project manager (HW) in Tel Aviv which allowed access to the sports programmes being run with young Israeli’s as well as assistance from a local researcher with the necessary language skills to ensure access and

¹ <http://www.one2onekids.org/objectives.cfm>

communication. The cycling programmes set up by One to One have been in existence for four-years, mainly in Northern Israel with on average 15 young adolescents participating in each of the programs, facilitated by coaches. To date there has been no evaluation of the benefits of these programmes.

Another important contextual factor for the research investigation reported here is a link with the Child Rehabilitation Initiative for Safety and Hope (CHERISH)² which investigates and intervenes with trauma and related disorder in children and young people in both Israel and Gaza. This is a collaboration between the Israel Centre for Treatment of Psycho-trauma of Herzog Hospital, the Centre for Development in Primary Health Care at Al Quds University; the JDC-Middle East Program (JDC-Israel, Ashalim the Myers-JDC Brookdale Institute, and AJJDC). CHERISH aims to build resilience in children and adolescents by undertaking research and assessment to better understand the needs of youth exposed to political conflict as well as by training teachers, social workers and counsellors in assessing and providing appropriate services for traumatised children and families. Contact with this research group provided help with baseline data and made available translated and validated questionnaires which proved invaluable in informing this project. Their research has confirmed the high rates of exposure to violence: for example their school-based screening project found that 73.4% of Palestinian youth and 35.4% of Israeli youth had personal exposure to conflict-related violence. They also report on PTSD rates of 36% for Palestinian and 7% of Israeli youth (Pat-Horenczyk, Abdeen, Brom, Shaheen, & Garber, 2004). Whilst CHERISH has initiated several in-school and community based programs to assist children with coping with the effects of political conflict it has not investigated sports interventions, showing the present project to be urgently needed.

Adolescents aged 12 to 16 were chosen as the focus for this study because they were the target for the cycling interventions, but also because this age group are particularly vulnerable to psychological disorder in part due to their

² www.projectcherish.org

stage of development. Thus considering normal or abnormal development was also an important aspect to the study. Impairments to their development through social, familial and personal experiences were seen as important since these can have significant lifelong impacts (Saigh & Green, 1996; Karen Salmon & Bryant, 2002). It is also an age and life-stage which provides a good opportunity for intervention, whilst the young people are within the school system, living at home and potentially permeable to the positive effects of intervention. Moreover, from a research and methodological point of view, young people of this age are also able to complete standardised self-report questionnaires alone and engage in focus groups to describe their experiences, more difficult to achieve with younger children at primary school level. This enabled the collection of more reliable and valid data.

1.4 Theoretical framework for the study

This study utilises both an Ecological and Attachment framework to identify respectively the social and psychological risk and resilience factors identified in the research literature in relation to psychological disorder. It also allows for a focus to monitor change amongst those involved in the sports program when compared with a comparison group. This dual theoretical framework was deemed appropriate because it has the potential for capturing on the one hand the contextual, social and cultural factors relevant to a region in conflict with disadvantaged minority populations, and on the other hand to personal and early life experience relevant to psychological development in adolescence. Both frameworks are outlined in greater detail below.

1.4a The Ecological Model

The Ecological model formulated by Bronfenbrenner (2005) proposes that human development is influenced by complex 'layers' of environment, each of which has an impact on the child's development. This ranges from the child's biological and psychological processes, the influence of family, the community and wider social and political influences. These are termed the microsystem (closest to the child), the mesosystem (family and neighbourhood), the exosystem (parent's workplace, community resources) and the macrosystem

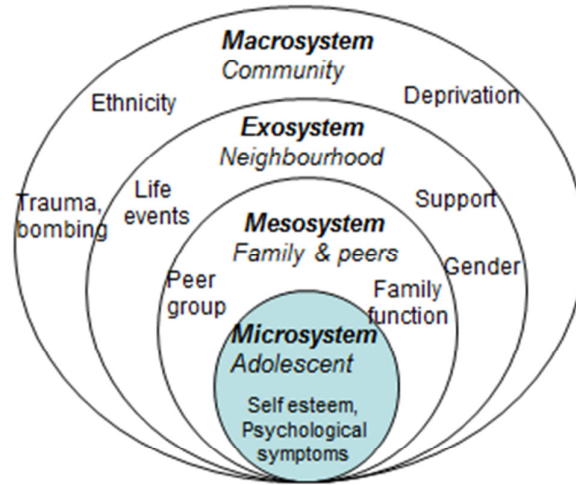
(cultural values and laws). All have impact either directly or indirectly on the child's development. Bronfenbrenner defines the ecology of human development as:

"The scientific study of the progressive, mutual, accommodation, throughout the life course, between an active, growing human being and the changing properties of the immediate settings in which the developing person lives, as this process is affected by the relationships between these settings, and by the larger contexts in which the settings are embedded"(pg 107)(Bronfenbrenner, 1979)

Examples of these different levels in the study undertaken, include the investigation of self-esteem and attachment style within the microsystem, relationships with family and peers in the mesosystem, exposure to bombing and socio-economic status as the macrosystem (see figure 1.1). Factors at different levels are interrelated. For example lower socio-economic status relates to poor parenting in childhood (Costello, Keeler, & Angold, 2001; Kiser & Black, 2005), through mechanisms such as father's unemployment, lack of education around parenting/developmental tasks, or higher stress levels in poor neighbourhoods. These factors can also relate to problem peer groups which in turn reduce the possibilities of peer social support and thereby reduce self-esteem (Haney, 2007; Kiser & Black, 2005). Whilst the factors in the Ecological model overlap to some extent with those in the Attachment model described below, differences lie in the greater focus on emotional and cognitive aspects of the latter, and the dynamic trajectory of development across infancy, childhood and adolescence in relation to parental relationships.

Figure 1.1 The Ecological model as applied to the study

Ecological Framework



1.4b The Attachment Framework

Bowlby's pioneering work in the 1950s examining mother-child relationships (Holmes 1993) established the concept of attachment formation and resulting attachment theory as developed in his trilogy of attachment (Bowlby, 1969, 1973, 1980). The basic premise stated that attachment is basic human need and a developmental process originating from the infant's innate need to be close to a caregiver, which provides safety and security for the vulnerable infant to ensure survival. The caregiver's response to the infant in turn, influences the child's ability to establish a close bond and their felt security. Where the response is hostile, distant or unpredictable then insecurity ensues. The quality and type of interaction between infant and caregiver over time then influences the developing attachment style, a pattern of attaching across individuals which persists into adolescence and then into adult life which can be more or less adaptive. Mary Ainsworth was responsible for identifying such attachment patterns in infants, as exhibited in the Strange Situation Test where the infant is separated for brief periods from the mother and style determined by behaviour on reunion (Ainsworth, Blehar, Aters, & Wall, 1978) .

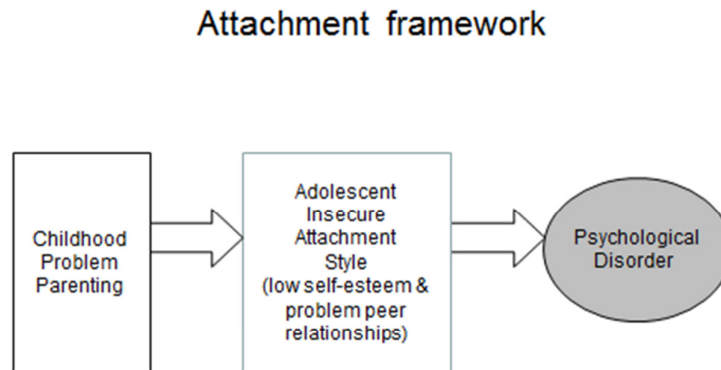
The styles she identified were Secure and two Insecure styles: Anxious-ambivalent and Anxious-avoidant. The continuity of the developing infant attachment style into adolescence and adulthood occurs through the mechanism of the cognitive 'internal working model' as applied to relationships (Ainsworth et al., 1978). These 'internal working models' are open to change over time as the young person's community of supporters expand giving them more opportunities for close relationships outside the immediate family (Joseph P. Allen et al., 2002; Joseph P Allen, McElhaney, Land, et al., 2011; Davila, Burge, & Hammen, 1997). They also relate to parallel internal working models of the self, and the development of self-esteem and identity (Bartholomew & Horowitz, 1991).

Attachment theory posits that relationships with parents in early life and early parenting experience in the form of care and control from parents can have life-long influences on functioning in terms of peer and couple relationships, support-access and self-esteem through the mechanism of attachment style. When these styles are insecure Anxious or Avoidant then there are damaging effects on relationships and self-esteem which increase the risk for psychological disorder (Joseph P Allen, McElhaney, Kuperminc, & Jodl, 2011; M Mikulincer, Horesh, Eilati, & Kotler, 1999).

However, attachment models also allow for the development of resilience where good early parenting, good interaction with family and peers and secure attachment style can protect against the effects of stress and adversity (Joseph P Allen, McElhaney, Kuperminc, et al., 2011; A Bifulco, 2010; Cairns, 2004). The wider network of social supports provide aids to development (Cameron, Ungar, & Liebenberg, 2007) and adolescents with secure attachment style are more likely to have higher self-esteem and well-being (Laible, Carlo, & Roesch, 2004). They are also more likely to seek out social support in stressful situations to relieve stress and regulate emotion (M Mikulincer, Florian, & Weller, 1993) with resulting better mental health. Secure attachment style thus can provide positive development under adverse conditions and function as a resilience factor (Cameron et al., 2007).

Thus, in attachment theory, relationships with parents in childhood form a basis from which psychological risk or resilience stems. In the study reported here the adolescents attachment style, self-esteem, peer relationships as well as quality of care and control from parents in childhood years is encompassed. This involves a dynamic trajectory with early childhood upbringing relating to concurrent attachment style and self-esteem and peer relationships and thus to psychological disorder. Thus the attachment trajectory crucially involves the passage of time as indicated in figure 1.2.

Figure 1.2 Attachment Framework



1.5 Defining Disorder, Risk and Resilience

A combined approach using both the ecological and attachment models described above investigated risk and resilience in Israeli youth to examine influences on a range of psychological disorders, to align with the research literature. Disorders studied were those defined in the Diagnostic Statistical Manual (DSM) classifications (First & Tasman, 2004a), and included those relatively common in the community in adolescence such as emotional disorder, conduct disorder and hyperactivity) as well as those less common (Post Traumatic Stress Disorder – PTSD) (Goodman, Ford, Richards, Gatward, & Meltzer, 2000) . This reflected the dual aims of the study – first to examine adolescent development in relation to disorder in a high risk

population, and second to examine risk factors particularly associated with trauma in the context of political conflict. Whilst attention was paid to thresholds denoting clinical levels of disorder to inform relevant clinical services, there was also a motivation to examine high levels of symptomatology that may fall short of clinical levels to inform public health policy and relate to quality of life. Therefore, given relatively modest numbers in the study planned, and the community-basis of the study it was planned to examine disorder at subclinical as well as clinical level. Whilst all the disorders examined are sensitive to the risk factors already outlined, PTSD is in some ways a special case since it is only diagnosed when trauma has occurred. Given the type of trauma experienced in conflict zones relates to acts of political violence for example involving bombing of civilians, measures were added to reflect this.

Risk factors are defined for this study as those negative experiences that result in a poor outcome in terms of higher psychological disorder and symptom levels. Consistent with the Ecological model these can reside in the individual (such as low self-esteem), family (single parent families, poor parenting practice), or in the community (poor support, peer difficulties, social deprivation)(J. Coleman & Hagell, 2007) , but also in the wider social context to include effects of ethnicity and adverse experiences encompassing non-personal trauma events and bombing experience.

Risk factors also encompass those familial factors identified earlier that lead to problem development in relationships and self-esteem around early life parental care and control difficulties as identified in Attachment theory. Whilst these are also psychosocial, they are more carefully placed in a developmental context and assume a dynamic trajectory in individual psychological development around Secure or Insecure attachment style and the ability to form secure internal working models leading to better social integration and sense of self. These models are inter-related. For example, being exposed to a non-personal traumatic event involving a bombing incident may result in PTSD for a young person vulnerable through having low self-esteem or insecure attachment style. All of these factors have been linked

with adolescent psychological disorder, and a more detailed literature review will be explored in chapter 2.

The study also encompasses resilience and the definition adopted here is “a *dynamic process encompassing positive adaptation within the context of significant adversity*” (pg 543)(S. S. Luthar, Cicchetti, & Becker, 2000). In other words, normal development under abnormal circumstances. This will be examined in two ways: first, in relation to the absence of symptoms and better functioning in terms of secure attachment style and good support despite the presence of adversity and poor childhood care. Second, in relation to the reduction of risk and symptoms, and increase of positive factors in relation to the sports intervention investigated (S. S. Luthar, Cicchetti, & Becker, 2000). As with risk, resilience aspects identified in the research literature include attributes of the child, family and social environment (Masten & Garmezy, 1985). Those personal attributes of the child identified include intelligence, religious affiliation, high self-esteem, social skills, self-efficacy and internal locus of control (Fonagy, Steele, Steele, Higgitt, & Target, 1994; S. Luthar & Zigler, 1991). Secure attachment style has also been identified as a resilience factor with evidence that a secure attachment style helps children and adolescents cope with stress and adversity (A Bifulco, 2010). Family resilience factors include attachment to parents, social support and religious affiliation(S. Luthar & Zigler, 1991; Rutter, 1990). In this latter context, some of the Israeli literature points to having a strong identify with the moral cause for conflict as a demonstration of resiliency (Punamaki, Quota, & El Sarraj, 1997).

1.6 Post-conflict interventions for adolescents

The research literature on interventions used in political conflict settings shows relief and refugee organizations facilitate several types of intervention programs including educational, play and sports programs(Arntson & Knudsen, 2004; Colliard, 2005; Kunz, 2007). The goals of these programs vary. For example, Right to Play³ focuses on building the capacity of the individual, the family and the community by providing different play and sports

³ [www.Right to Play.com](http://www.RighttoPlay.com)

based programs. Similarly, War Child⁴ International also works on interventions for capacity building to protect and empower young people so that they can develop normally and lead fulfilling lives in areas such as Lebanon, with leisure activities encompassed but no focus on sports in particular (Lith, de Graaff, Jansveld, & de Jager, 2007). Other international organisations include Save the Children whose mandate is much broader and provides feeding, education and health programs as well as lobbying for children's rights in at risk populations rather than specific small scale interventions⁵.

Current evaluations of such programs are growing in number as theoretical frameworks and methods to aid in evaluation are established (Arntson & Knudsen, 2004; Colliard, 2005; Kunz, 2007). A variety of psychosocial interventions are used to lessen the negative psychological and development impacts of political conflict and deprivation on children and adolescents. Psychological therapies have been investigated in relation to disorder, specifically trauma symptoms. Cognitive behaviour therapy (CBT) programs, in school and communities have been shown to be effective in alleviating symptoms of PTSD (Dybdahl, 2001; Ehnholt & Yule, 2006; Layne et al., 2008). Peltonen & Punamaki reviewed preventive interventions used with children exposed to armed conflict and found that CBT based programs were widely used and were found to decrease PTSD symptoms, with the most successful programs also building up resilience in the form of improved self-esteem and support (Peltonen & Punamäki, 2010).

Sports programs are also growing in popularity in post-conflict or post-disaster settings as a means of providing "*a neutral and safe ground in which to gain stabilization*" (page 16) (R. Henley, 2005). In general, participation in sports has been shown to provide improvements in self-perception, including self-esteem (J. P. Andrews & Andrews, 2003) , self-image (Kircaldy, Shephard, & Siefen, 2002) and self-efficacy (Feltz & Magyar, 2006; Guest, 2005). There is also some evidence for decreased feelings of depression and anxiety

⁴ www. <http://www.warchild.org>

⁵ www.Save the Children.co.uk

following sports interventions (Brosnahan, Steffen, Lytle, Patterson, & Boostrom, 2004; Pastor, Balaguer, Pons, & Garcia-Merita, 2003). In addition, sports interventions are argued to assist emotional development through goal setting, learning time management and developing initiative (Larson, Hansen, & Moneta, 2006). Moreover, participation in physical activity programs are associated with improved health in adolescence, preventing eating disorders (Elliot et al., 2004) and decreased substance abuse (Moore & Werch, 2005). Henley & colleagues postulate that sports programs help to build resilience by providing key support figures such as the sports coach, and helping children develop problem solving skills in relation to persevering and improving in the sport (Robert Henley et al., 2007). In post-conflict settings, sport is thought to improve confidence, body image, and foster communication and development of positive role models (R. Henley, 2005). Henley noted the importance of an effective coach who can act as a role model. In addition to modelling appropriate behaviour, coaches can be trained in crisis intervention, counselling, and conflict resolution, to increase their effectiveness (R. Henley, 2005).

However, rigorous empirical studies on the effects of sports programs in young people living in post-conflict settings are few (Akhundov, 1999). One quoted is a program evaluation for Save the Children's football programme in a refugee camp in Kabul, Afghanistan (Aniston, 2001). The aim was to improve social networks, improve sense of self-worth and provide a sense of normalcy for the adolescent boys who participated. After 14 months of participating, the young men reported improvements in self-discipline, teamwork and sense of self-worth. These focus groups findings were part of a broader evaluation of the several community programs (Aniston, 2001).

Given this embryonic literature on sports programmes, it is expected in the present study that adolescents who participate in the cycling project may gain increased self-esteem, improved support from peers and coaches in the program, that families or local neighbourhoods could not supply. Participating in an enjoyable activity will also serve as a distraction from hardships in their lives, add to their general fitness and give them opportunity to learn new skills

and receive positive feedback. Such an experience may then alleviate psychological symptoms and thus increase resilience. In order to examine this more qualitative aspect, focus groups and interviews were included in the study.

1.7 Challenges of Conducting Research in Cross-Cultural Settings

Research undertaken in different cultures requires attention to content, context and process-related elements in order for the research to be conducted ethically and rigorously. It is important to determine that the research topic is culturally relevant to the needs of the groups and cultures being studied. It is now well established that psychological disorder exists across cultures, with most categories of disorder fairly consistent across different areas of the world, although particular symptoms may be expressed differently or even suppressed (Bose & Jennings, 2005). The disorders to be examined in this project have been widely studied in Israel, together with the associated risks and resiliencies by local researchers (Pat-Horenczyk, 2004) indicating the validity of the concepts and models of development and adaptation developed in UK and US research, therefore these aspects were deemed suitable to pursue.

Contextual elements require attention for example the political, socio-economic conditions, as well as physical resources, in order to ensure feasibility of the study as well as for correct interpretation of results (Im, Page, Lin, Tsai, & Cheng, 2004). Given Israel is a democratic country with generally good levels of affluence and technological advancement, the environmental context for this study are similar to those in Western countries apart from events related to political conflict and the cultural sensitivity to these events. These are challenges faced by Israeli youth on a daily basis and therefore relevant to their social and psychological development.

Process related elements in cross-cultural research involve paying attention to the manner of conducting the research. In addition to the usual ethical

procedures followed in all good research, ensuring a message of mutual respect to the participants from across the Arab and Jewish cultures is essential from both an ethical and professional perspective. It is also imperative that the research and researcher can adapt to local conditions and needs (Im et al., 2004). Also, while it is necessary to maintain a rigorous study design for scientific reasons, the setting of the research requires flexibility in its implementation. For example, conflict can erupt at any time, together with other features of instability such as school strikes. In addition, general mistrust of research work across community divides was real and the research process required awareness, sensitivity and impartiality. In order to be immersed in local conditions, the investigator moved to live in Israel while conducting the study, to better understand the public atmosphere during the period of the research as well as to undertake data collection which required the help of a local researcher who was bilingual in Hebrew and Arabic, but who as an Arab Christian could move between the two conflicted communities.

With all these factors in mind, the study aimed to provide new knowledge on issues of risk, resilience and disorder in adolescents in post-conflict zones, and in relation to the evaluation of a sports intervention. It used an innovative blend of both Ecological and Attachment models, and included a range of disorders, those common (emotional and behavioural) and those particularly relevant to the increased trauma experience in conflict zones (PTSD). In this way it aimed to fill a gap in the existing research to inform both research and practice about adolescent development under difficult conditions.

1.8 Summary

This introductory chapter has presented the background, key themes and conceptual models guiding this research project. An ecological and attachment model was outlined to encompass the risk and resilience factors investigated in the Israeli adolescents and to structure investigation of the effects of the sports program. The disorders to be investigated were outlined as those common in adolescence (Emotional and Behavioural) and those related to trauma and more common in war zones (PTSD). Israel was

selected for study, first as a post-conflict zone with a deprived minority population with social adversity and the likely higher exposure to trauma, and second because the opportunity to evaluate a newly formed cycling intervention was provided. The age group (early adolescence) was dictated by the group selected for the intervention, but also fit with investigating a key developmental period where effects of both childhood problem care and trauma were likely to be critical for lifetime development, and a stage where disorder rates are known to be high. The intervention (cycling) was chosen as one available in Israel, and one hypothesised to increase support and self-esteem, noted as resilience factors against disorder. The use of sports interventions in post-conflict zones for young people was outlined with limited empirical study of its efficacy. The chapter concluded with a discussion on challenges to conducting research in cross-culture settings.

In the next chapter, the research literature relevant to adolescent development and emotional and behavioural disorder, as well as in relation to living in conflict zones, trauma and PTSD will be outlined. Both will be examined in relation to the chosen Ecological and Attachment frameworks.

Chapter 2: Literature Review

2.1 Introduction

This chapter will review the relevant literature on adolescent development, risk and disorder as well as the resilience factors relevant for the sports intervention evaluated. These are framed by the Ecological and Attachment approach adopted.

The chapter is organised around three sections:

- Adolescent development, which covers normal development, psychological disorder in adolescence, social (Ecological) and psychological (Attachment-based) risk factors for psychological disorder and adolescent experience in Israel.
- Resilience factors, exercise and mental health and wellbeing
- Study aims and research questions.

2.2 Adolescent normal development

Before examining risk and disorder in adolescence it is necessary to first to outline this life-stage as a developmental period linking childhood and adult maturity. This developmental stage involves rapid physical (sexual and growth) and psychological changes and changes in behaviour distinctive in adolescence. The changes in eating and sleeping, socialising, learning, being sexually aware and risk-taking are all underpinned by biological change with consequences for psychological and social adjustment (Pulkkinen & Caspi, 2002). Normal adolescent development allows for the smooth transition towards adult maturity and later stages of partnership, parenting and work free from disorder. Problem development leads to distortions in behaviour and psychological growth which can lead to psychological disorder, which has implications for later adjustment (Cicchetti & Cohen, 2006).

A key biological change in adolescence is that of puberty, the development of secondary sexual characteristics and influx of hormones associated with changes in behaviour, differentiated by gender (A Angold, Costello, & Worthman, 1998; T E Moffitt, Caspi, Belsky, & Silva, 1992)(Hankin, Benjamin Abramson, Moffitt, Silva, McGee, & Angell, 1998). This forms the basis of the

higher rate of behavioural disorder in boys and emotional disorder in girls (Zahn-Waxler, 1993). Puberty is occurring at earlier ages in Western countries, as a consequence of improved nutrition and health care (A Angold et al., 1998). Timing of puberty can be important in relation to risk for adolescent psychological disorder. Thus off-time onset of puberty can counteract the usual gender patterning of disorder with early puberty in girls associated with more behavioural disorder (Adrian Angold & Worthman, 1993; Barbara Maughan, 2005; Messer, Goodman, Rowe, Meltzer, & Maughan, 2006) and later puberty in boys is linked to emotional disorder (A Angold et al., 1998).

There are also development changes in the adolescent relating to cognition. The adolescent brain undergoes synaptic pruning creating greater interaction between areas in the brain such as the prefrontal cortex, to provide greater skill in higher reasoning, thinking, decision making, and processing of information (Agnes Brunnekreef et al., 2007). The changes in cognitive development include further development of moral reasoning, empathy and greater awareness of self. The latter can contribute to problems in self-esteem, particularly in relation to body-image and this more common in girls (J. Coleman & Hagell, 2007). On the social level, adolescents move to develop greater autonomy from parents and invest more in their relationships with peers and newly developing sexual relationships. Yet in Western countries this is in the context of schooling to later ages and delayed employment. Thus it has been argued that adolescents mature physically earlier, but socially later, than in previous decades which can lead to ambiguity and dissonance in their status and maturation (A Caspi & Moffitt, 1991). Risky behaviour is more common in this age group with problem outcomes relating to sexual behaviour (eg teenage pregnancy or sexually transmitted diseases) as well as aggression and criminal behaviour, alcohol and drug taking, problem eating patterns and self-harm (B Maughan, 2001; Barbara Maughan, 2005; Pederson, 1994). Therefore risk for a range of psychological disorders is particularly prominent in mid to late teenage years.

Taken together, the adolescent is situated in a particular conflux of change in development where biological, psychological and social influences all have input. The majority of adolescents grow up to be healthy, functional adults, securely attached to supportive parents, with high self-esteem and positive peer relations helping them negotiate this period of development and overcome adversities and challenges. When such elements are not in place, for example due to a problem family background, difficult relating style or problem peer group, this puts the young person at risk for disorder (J. Coleman & Hagell, 2007). For the young people living in Israel selected for this study from families involved with social services, these risk factors put them at higher risk for disorder and thus as having problems negotiating the adolescent phase of development. Below the characteristics of disorder covered in this study are outlined, followed by the documented risks for these disorders.

2. 3 Defining Psychological Disorder in Adolescence

Rates of disorder are high in adolescence, with lifetime peaks argued to occur for both depression and conduct disorder (I M Goodyer, Cooper, Vize, & Ashby, 1993; I. Goodyer, Tamplin, Herbert, & Altham, 2000). This is likely to be due to the biological changes relating to physical, sexual and intellectual maturation, as well as psychological factors around identity and achieving independence from parents and social factors around increased influence of peers and others outside the home (Muller, Goebel-Fabbri, Diamond, & Dinklage, 2000). The interaction of these factors in producing disorder is increasingly being investigated producing bio-psycho-social models with greater understanding of specific gene-environment interactions (A Caspi, 2002; Avshalom Caspi, Hariri, Holmes, Uher, & Moffitt, 2010; T.E. Moffitt, Caspi, & Rutter, 2005) and endocrinological influences (Ian M Goodyer, Bacon, Ban, Croudace, & Herbert, 2009; M Gunnar & Fisher, 2006) as well as neuro-scientific factors and brain development (Megan Gunnar & Quevedo, 2006; Terrie E Moffitt, 1993) which predispose individuals from early years. These factors are complex and entail very detailed exposition. Since they are

not directly relevant to the psycho-social study presented here they are not outlined.

2.3a Emotional Disorder: Anxiety and Depression

Emotional disorders are indicated by disturbance in mood, and include anxiety and depression (Hughes & Gullone, 2008). Anxiety disorder is estimated to affect 20% of young people with rates increasing with age (Essau, Conradt, Petermann, & Phil, 2006) (Essau et al., 2006) and is characterised by excessive fear and worry, accompanied by autonomic symptoms, common in several disorders including social phobias, separation anxiety and panic/agoraphobia (Fong & Garralda, 2005). Anxiety is highly correlated with depression with 20% to 70% of YP with depression also having anxiety disorder (Merikangas, 2005). Meltzer and colleagues survey of 10, 000 UK children and YP aged 5 to 15 years of age found that 3% of children and 4.6 % of adolescents had at least one anxiety disorder (H Meltzer, Gatward, Goodman, & Ford, 1999). Co-morbidity is high at 40%, most commonly with depression but also with behavioural disorder such as conduct disorder (Fong & Garralda, 2005). Anxiety is twice as likely to occur in girls than boys (Hughes & Gullone, 2008). In childhood, anxious and controlling parenting is shown to contribute to anxiety disorder (Fong & Garralda, 2005).

Major depression as defined by DSM-IV criteria is characterised by cognitive, emotional and somatic symptoms which include low mood, tearfulness, recurrent sadness, reduction in activity, sleep disturbances and poor appetite as well as hopelessness (Hughes & Gullone, 2008). These symptoms can be accompanied by functional impairment affecting school performance and relationships with parents and peers (Ryan, 2005).

Hughes's review of depression in adolescents found a point prevalence of 0.4% to 8.3%. In addition, prevalence of sub-clinical disorder has been found to be 20-50% (Hughes & Gullone, 2008). Meltzer and colleagues' national UK study found a 1.8% point prevalence of depression in 11 to 15 year olds (Howard Meltzer, 2007). A third of those with symptoms are likely to have recurring episodes or chronic conditions (Bramsfeld, Platt, & Schwartz, 2006; P M Lewinsohn, Rohde, & Seeley, 1998; Ryan, 2005) and half had a re-

occurrence within 2 years (Hughes & Gullone, 2008). Studies in the USA found symptom rates of 18% in a school survey of 9,800 adolescents (Saluja et al., 2004). In both the UK and US studies, depressive symptoms occurred twice as often in females (B Maughan, Collishaw, Meltzer, & Goodman, 2008; Saluja et al., 2004). In addition, young women are more prone to have recurring episodes of lifetime depression after the priming of a first episode in teenage years (Harrington, 2004; Hyde, Mezulis, & Abramson, 2008). This is in part due to later risks including relationship violence which maintains disorder (Antonia Bifulco, Moran, Jacobs, & Bunn, 2009; I M Goodyer, Cooper, et al., 1993). An acknowledged risk factor for depression is low self-esteem particularly in females, often associated with body image (Kelvin, Goodyer, Teasdale, & Brechin, 1999; Kliewer & Sandler, 1992). Other disorders sometimes included as emotional are deliberate self-harm behaviour and eating disorders, both again at peak prevalence during adolescence. Both involve elements of low self-esteem or self-loathing and emotional dys-regulation. Self-harm in particular, in common with depression has a greater association with childhood neglect and abuse (Fassino, Amianto, & Abbate-Daga, 2009; Fliege, Lee, Grimm, & Klapp, 2009; Kimbrel, Cobb, Mitchell, Hundt, & Nelson-Gray, 2008) However these disorders have low prevalence in the population and are not included in the study reported here.

2.3b Behavioural Disorder: Conduct Disorder and Attention Deficit/Hyperactive Disorder (ADHD)

Both (ADHD) and Conduct disorder are behavioural disorders common in early adolescence. ADHD usually has an onset in early childhood, and is characterised by “ *developmentally deviant levels of poor sustained attention and impulse control as well as excessive physical activity or impaired regulation of activity levels to situational demands*” (pg. 580)(Fischer, Barkley, Edelbrock, & Smallish, 1990). Symptoms typically begin prior to age 7 and last at least 6 months before diagnosis is considered(First & Tasman, 2004b). Rates of ADHD are higher in boys, with UK population rates showing 1.4%

overall in teenage years, with .5 % rate in girls and 2.3% rate among boys (H Meltzer et al., 1999).

ADHD is an information processing disorder that affects the frontal lobe of the brain (Trott, 2006). It affects the executive functions of the brain, the section that connects, prioritises and integrates information coming from the environment and the individual response to it (Kordon, Kahl, & Wahl, 2006). The child with ADHD has difficulties paying attention, is impulsive and overly restless (Trott, 2006) and lacks “ *capacity to organize tasks, materials, sustain efforts on the task, use short term memory for daily activity*”(Kordon et al., 2006). Those with ADHD who are not treated can later experience problems in school, abuse drugs/alcohol, or have learning difficulties, and it is a precursor of Conduct disorder. The clumsiness and discomfort experienced in social situations can also lead to social isolation (De Pauw & Mervielde, 2011).

There are degrees of severity of ADHD with some children and youth able to function without medication and who respond well to problem-solving and behaviour modification. Moreover, young people with ADHD manage better if they are intelligent, have a positive family environment and have a supportive school system (Kordon et al., 2006).

Conduct disorder is characterised by disturbance in regulation of behaviour. The DSM-IV criteria for disorder include : 1) aggressive behaviour that causes or threatens to harm people or animals 2) damaging property 3) lying, stealing 4) rule breaking (First & Tasman, 2004a) . Such behaviour tends to occur in late childhood with a large increase in adolescence. Early precursors of conduct disorder are ADHD. Again conduct disorder is more common in boys. Rates in the UK population show 5% of children aged 5 to 15 years had conduct disorder, increasing from 2.8% to 3.5% in teenage years. Rates are higher in boys (6.9% of boys and 2.8% of girls from 5 to 10 years) (H Meltzer et al., 1999). Children who become violent as adolescents can be identified with almost 50% reliability as early as age seven. Approximately 40–50% of

children with conduct disorders may develop antisocial personality disorder as adults.

For conduct disorder in teenage years, the role of peers and the social environment plays an important role. Being exposed to harsh, controlling parenting; being from a family with high levels of conflict; living in high crime, resource poor area and associating with deviant or antisocial peers all play an interrelated role in the disorder (Barbara Maughan, 2005). Conduct disorders are the most common reason for referral of young children to mental health services. Treatment for conduct disorder works best with a family approach addressing behaviour changes through counselling and/or CBT(Kazdin, 2001).

2.3c Post-traumatic stress disorder (PTSD)

PTSD is an important focus for this study due to the expected increased exposure to traumatic events arising from political conflict in the area of study. PTSD is an unusual disorder in that it is only diagnosed in relation to a traumatic event, followed by a set criterion of symptoms. To count as trauma, the external event must convey "*actual or realistically perceived threat to the life or personal integrity of self or others*" (pg 100)(Cairns, 2004) accompanied by extreme fear, helplessness or horror (Cairns, 2004) . In addition to the traumatic event occurring, four sets of criteria are also required for the full disorder. This includes the emotional response of fear/horror (criterion A); re-experiencing, usually through dreams or flashbacks (criterion B); avoidance of thoughts, feelings or places and people related to the trauma (criterion C) and hyper-vigilance or hyper-arousal (criterion D) which is characterised by irritability, emotional outbursts and concentration problems (First & Tasman, 2004b; Keppel-Benson & Ollendick, 1993; Karen Salmon & Bryant, 2002). For the majority of individuals with post traumatic event symptoms, these tend to resolve in 3 to 6 months(De Bellis & Van Dillen, 2005; Foy, Madvig, Pynoos, & Camilleri, 1996; Karen Salmon & Bryant, 2002). However for some, the condition becomes chronic due to a wide range of personal, environmental and historical factors (Litz & Maguen, 2010). When the symptoms persist then full PTSD can be diagnosed. Inconclusive evidence remains on the relationship between gender and PTSD

(Foy et al., 1996) although several researchers show that girls suffer from PTSD at a higher rate than boys (Pfefferbaum, 1997; Udwin, Boyle, Yule, Bolton, & O’Ryan, 2000).

Definitions of PTSD are the focus of debate around the trauma identified (Brewin, Lanius, Novac, Schnyder, & Galea, 2009; Kilpatrick, Resnick, & Acierno, 2009)), the more complex presentations of the disorder (Ardino, 2011a) and whether it can be diagnosed in children (Ardino, 2011b; Balaban, 2009). The original PTSD diagnostic tools were designed for adults and the expression of the same disorder in children or young people is controversial and less extensively studied. Features such as repetitive and thematic play, traumatic re-enactment and nightmares which may focus on the trauma or not, occur amongst responses in children (Balaban, 2009; Nader, 2011). In chronically traumatised children, problems with self-regulation, attachment relationships, dissociation depersonalisation and impulse control have all been identified, with the clinical formulation identified as ‘complex PTSD’ (Herman, 1992; van der Kolk & Pelcovitz, 1996).

Thus PTSD symptoms can be expressed very differently although the broad categories (A,B,C & D) are all seen in children(Nader, 2011). Developmental stage is relevant, with aggression, impulse control, poor concentration, detachment and inability to see the future, occurring in teenagers(McNally, 1996; Perrin & Smith, 2000; Yule, 2001). New diagnostic tools have been adapted to the developmental needs of different age groups thereby allowing for identification of disorders(Balaban, 2009).

The study of trauma has arisen around three different themes. The first is the study of natural disasters such as floods, accidents and disaster, which influenced the very early work of Leonore Terr (L. C. Terr, 1979), the second from experience of war and among veterans(Kulka & Schlenger, 1990) and the third in relation to trauma arising from childhood abusive experience(van der Kolk & Fisler, 1994). The degree to which it is personal or non-personal, individual or collective varies and these differences have potentially differing effects. Of course these are not mutually exclusive. A war veteran or someone

injured by a terrorist bomb may have had an abusive childhood. In these situations the 'priming' of the earlier experience is likely to have a greater impact on PTSD (J. G. Allen, 1995).

Rates of PTSD are low in the community at large. Indeed, Meltzer and colleagues show rates of .4% in the community in the UK (Howard Meltzer, 2007). However, these increase substantially in war zones or areas of conflict with rates of 30% in Sri Lanka (Catani, Jacob, Schauer, Kohila, & Neuner, 2008) shown in 23% in Gaza (Espie et al., 2009) and rates of 6% in Israel (Pat-Horenczyk, Abramovitz, et al., 2007). However, in addition to full cases, symptoms of PTSD have also been researched ('sub-clinical' for full PTSD) to understand responses in the community (Catherall, 2011; Nader, 2011; Scholte et al., 2004). Such symptoms individually, such as re-experiencing or avoidance can impair everyday functioning and can have negative effects on everyday life. Community studies have taken a variety of approaches to researching PTSD with those in conflict areas extending the number of trauma experiences identified (Pat-Horenczyk, 2005a; Pat-Horenczyk, Peled, et al., 2007) as well as investigating contributing criteria of PTSD as separate outcomes, without the full diagnosis being required (Carrion, Weems, Ray, & Reiss, 2002). Thus, us even at sub-clinical thresholds, trauma responses can be very debilitating for young people (Nader, 2011).

The severity of PTSD symptoms depend upon the severity and proximity to the trauma and the number of exposures to traumatic event as well as personal susceptibility (De Bellis & Van Dillen, 2005; Stichick, 2001; L. Terr, 1992). For most people, symptoms of PTSD resolve 3 to 6 months after the trauma event. However for some, the condition becomes chronic due to a wide range of personal, environmental and historical factors (Litz & Maguen, 2010). Personal risk factors include having a co-morbid psychological disorder such as anxiety or depression (Freedman, 2009), early life prior exposure to trauma including neglect and abuse and poor self-view (Surtees, Miller McC, & Ingham, 1986). The most notable environmental factor for chronicity of symptoms was lack of access to support (B. Andrews, Brewin, & Rose, 2003). Trauma related factors which increase chronicity of response include the

degree of severity to life threat, resource loss and loss of loved ones (B. Andrews et al., 2003).

2.4 Risks for disorder in adolescence

There are many risk factors identified for disorder in adolescence. These are biological social and psychological and there are overlaps in risk for the different disorders outlined above. Therefore these are outlined in general rather than in relation to each disorder in turn, and the converse aspect of resilience described later. As described in chapter 1, the risk factors focused on in this study arise from the social Ecological model and the Attachment framework as described in chapter 1. However a number span both models. These are described below, beginning with those more social and ending with those attachment based.

2.4a Peer Relations

Because of the greater importance of peer relationships in adolescents, problem peer relationships are highly related to a range of adolescent disorder. This can occur through different routes for example with lack of popularity, rejection or isolation more associated with depression and associating with 'deviant' peers (ie those delinquent) relating to conduct disorder (Muller et al., 2000; Windle, 1994). Difficulties in making relationships, including with peers, is argued to be a function of attachment style, with insecure style reducing positive peer relationship in adolescence and in adulthood (A Bifulco, Moran, & Ball, 2002; Booth-Laforce et al., 2006; P. K. Coleman, 2003) Related to secure attachment style, and positive self-esteem is positive peer relations. Having a secure attachment to a parent, particularly the mother, and positive self-esteem influences the quality of peer relations (Wilkinson, 2010); promotes academic achievement, competence, protects form disorder (Prelow, Weaver, & Swenson, 2006) and prevents associations with deviant peers (Weaver & Prelow, 2005). On the other hand, Caldwell's study found that parents who were manipulative or used guilt with the children had young people with a low self-view. As a result, these young people viewed themselves as poor socializers and found friends who

endorsed this negative view or disengaged from peers thus further undermining their self-esteem (Caldwell, Rudolph, Troop-Gordon, & Kim, 2004). Quinton and colleagues found that young people with conduct disorder were more likely to find an unsupportive or deviant social group. This arose from having a combination of poor parenting and not having the skills to develop and implement good choices for themselves (finding positive friends being one of those choices)(Quinton, Pickles, Maughan, & Rutter, 1993).

2.4b Self-esteem

Self-esteem is identified as a risk factor for depression (Koestner, Zuroff, & Powers, 1991; Peter M Lewinsohn, Seeley, & Gotlib, 1997) is a known correlate of poor attachment (Bartholomew & Horowitz, 1991) as well as arising from problematic parenting in childhood (van der Kolk & Fidler, 1994). It is also identified as a risk factor for PTSD (Catherall, 2011). The degree to which parents are supportive and nurturing to their adolescents has been found to influence self-esteem (Barnow, 2005; Dekovic et al., 2006; Franco & Levitt, 1998). Wilkinson aptly explains the process:

“Quality attachments appear to be intimately related to how we think of a judge ourselves. Close, secure and trustworthy relationships with parents and friends lead adolescents to evaluate their own attributes and worth more highly. It is this evaluation that then influences psychological symptoms” (pg 490)(Wilkinson, 2004)

The pathway to self-esteem may be channelled through positive parenting. The quality of the parent/adolescent relationship influences the self-view of the adolescent (Dekovic et al., 2006). A supportive grounding forms the basis for self-esteem although, young people modify their perceptions of themselves as they develop (Troop-Gordon & Ladd, 2005). Girls, particularly, tend to be more preoccupied with appearance and self-conscious of the changes, making them at greater risk for self-esteem problems (Harter, 1989). Negative perceptions of the self can effect well-being and can also lead to aggressive behaviour (Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005) and psychological disorder (Rhode, Lewinsohn, & Seeley, 1994)

although are also closely associated with internalising disorder such as depression (Morris Rosenberg, Schooler, & Schoenbach, 1989).

2.4c Stress and Trauma

Stress is identified as a risk factor for any type of disorder outlined above (I. Goodyer et al., 2000; Rutter, 1985; Tiet et al., 1998) but particular types of stress constitute trauma, and this is specific to PTSD definitions. Trauma is an ambiguous term that includes two meanings – the externally generated experience or ‘event’ that constitutes trauma **exposure** and the internal and personal response to that event which is the traumatic **impact**. Standard diagnostic criteria developed in the USA (DSM-IV-Tr) define both trauma and its impact as one that :

“must have involved actual or threatened death or serious injury or threat to the individual or others, and exposure to this event must arouse an intense affective response characterised by fear, helplessness, or horror” (pg 463)(First & Tasman, 2004b).

For attachment interpretations, it is important to note the difference between inter-personal and non-personal traumatic events. Standard measures include both interpersonal ones (eg being beaten up or sexually abused) but also non-personal ones related to accidents or disasters. Both are included in the approach described here, but the usual list of trauma events extended to include those involving bombing, since this is pertinent to the political conflict context of the study in Israel. Whilst both types of trauma are likely to increase PTSD disorder, the association with poor care in childhood and insecure attachment style may create more likelihood of inter-personal trauma, although may also increase susceptibility to the impact of non-persona trauma in addition.

The effects of traumatic experiences are believed to be dose-dependent with more exposure (greater intensity and chronicity) more likely to lead to psychological and physical impairments including PTSD(Stichick, 2001; L. Terr, 1992). It is also recognised that trauma impacts do not have to occur

from one, dramatic event, but can also result from repeated, less intense exposure to events that may ultimately be equal in impact to a single, high intensity traumatic event(L. Terr, 1992). This point is particularly important in countries such as Israel where there is on-going exposure to bombings, threats of bombing and violent images in the media.

Young people exposed to types of trauma that are life-threatening, on-going and repeated are more likely to experience long term problems in adaptation because the cumulated events:

“sensitizes and creates a landscape where the effects of multiple traumatic events undermine resilience factors and increase the vulnerability of individuals to develop PTSD” (pg 46)(Cicero, Noonan, & Silva, 2011).

In response to traumatic events, adolescents may *“become either extremely inhibited in the expression of emotion or explosive, extremely cautious or excessively risk-taking, and overly defiant or overly compliant”* (pg 16)(Nader, 2011). Young people may also experience *“increased detachment from others, sadness, restricted range of affect, and dissociation”* (pg 34)(Keppel-Benson & Ollendick, 1993).

As already noted, ongoing exposure to conflict and war trauma can lead to several mental health conditions in addition to PTSD, including depression and other anxiety disorders(Ehnholt & Yule, 2006; Mollica, Lopes Cardozo, Raphael, & Salama, 2004; Scholte et al., 2004; de Jong et al., 2001; de Jong, Komproe, & Van Ommeren, 2003). These conditions are the most recognised in the war trauma literature but a wide array of somatic and functional complaints are also recognized as consequences (Goldstein, Wampler, & Wise, 1997; Hobfoll et al., 2007; Mollica et al., 2004). Disorders in adolescents resulting from exposure to conflict follow the same pathways as in adults: PTSD, anxiety, depression(Ehnholt & Yule, 2006). Udwin and colleagues suggested that risk factors for developing PTSD disorder after a trauma incident include being female, having a learning disability or an pre-existing mental health problem (Udwin et al., 2000). It is thus crucial to encompass a range of possibly co-morbid conditions.

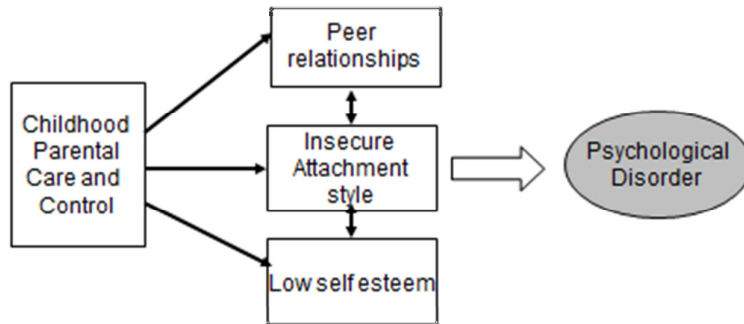
In addition to number of traumatic events, other factors place a young person at greater risk for developing PTSD after experiencing a traumatic event. Having a pre-existing psychological disorder particularly anxiety, can exacerbate symptoms of PTSD (Cicero et al., 2011; Kilpatrick et al., 2003); having an emotional disorder such as depression has also been shown to increase PTSD symptoms more so than externalising disorder. There are also personal characteristics which render some individuals more sensitised to trauma effects. Family function also impacts a young person's ability to deal with traumatic events. More severe trauma symptoms are experienced with YP who have an unpredictable, unsupportive family life (Ford, 2009) or parents with unhelpful coping styles in relation to traumatic events (De Bellis & Van Dillen, 2005; Foy et al., 1996; Kaminer, Seedat, & Stein, 2005). This links problematic home life with increase in stress levels and PTSD (Fincham, Altes, Stein, & Seedat, 2009). This is an alternative interpretation to the attachment-based discussion of problem parenting described below.

2.5 Attachment and risk for disorder

As described in chapter 1, the other theoretical influence on the study reported here is that of attachment theory. Unlike the Ecological model, this is essentially dynamic, examining the influence of early childhood relationships with parents primarily on insecure attachment style, in turn hypothesised as increasing risk of psychological disorder. Such insecure attachment style is highly related both to low self-esteem and problem peer relationships as described earlier. Given the first phase of this study is cross-sectional, the time order of the proposed model cannot be tested, but the time order indicated in figure 2.2 is based on that expected from attachment models. Attachment theory as a developmental approach for risk for psychological disorder will be briefly outlined.

Figure 2.1 Elaborated Attachment framework in identifying risks for adolescent disorder

Attachment framework used



Early childhood attachment to a parent or caregiver is necessary for healthy development and provides a source of safety ('secure base') and on-going reassurance to manage anxiety and distress in the infant when faced with unfamiliar or stressful situations (Muris, Meesters, van Melick, & Zwambag, 2001). The relationship of the parent to the child in terms of closeness, and the positive appraisal of the child help to shape the view of self in the infant. This will inform the growing child whether they are good and lovable.

The infant over time and repeated exposure internalises this self-view and becomes an internal working model or attachment style (Ainsworth et al., 1978). This attachment style was noted to be secure or insecure with insecure being further subdivided into anxious-ambivalent, avoidant or disorganised(Ainsworth et al., 1978) This attachment style can then impact on future self-esteem and future relationships (Shaw & Dallos, 2005). It can also provide a frame for how one view's the world and how one view's themselves. A negative view of the outside world is often paralleled with a negative view of the self. Batholomew and Horowitz (1991) proposed a model whereby the different attachment styles are combinations of seeing the self or

other in negative terms. Thus whilst Secure attachment style involves positive view of self and other; Enmeshed involves negative view of self but positive view of other; Dismissive is a positive view of self and negative view of other with Fearful having a negative view of both (Bartholomew & Horowitz, 1991). Thus where there is initial rejection or harm, it can carve a deep belief into a child in which they feel unable and unworthy of having their needs met (J P Allen, Moore, Kuperminc, & Bell, 1998; Laible et al., 2004; Morris Rosenberg et al., 1989).

2.5a Attachment style

While the early attachment bond with a parent is the initial source of attachment and the formation of the internal working model, it is also important that parents provide on-going guidance, support, praise, comfort and love to continually confirm this internal working model in a young person. The young person, in turn, requires the continuous reassurance from the parent. However, the frequency and intensity in seeking out reassurance from the parent decreases as the young person grows older (Bowlby, 1973).

Parents, when attuned to their young person's internal states, can provide a safe haven to allow them to become autonomous (Joseph P Allen, McElhaney, Land, et al., 2011; Joseph P Allen, McElhaney, Kuperminc, et al., 2011):

“Adolescents were able to explore their intellectual and emotional independence and autonomy from the secure base of a high degree of positive relatedness with their mothers. This process of establishing autonomy in intellectual terms from the secure base of a well-regarded, well-maintained relationship with an attuned parent appears highly analogous to the infant's process of exploring physical independence from the secure base of a sensitive, responsive attachment figure”

(pg 302) (J. Allen et al., 2003)

A secure attachment style, sets the adolescent up to deal better with adversity (Cameron et al., 2007; M Mikulincer, Florian, et al., 1993; K Salmon & Bryant, 2002; Weinfield, Sroufe, & Egeland, 2000; Weinfield, Whaley, & Egeland,

2004). It also increases the likelihood of positive and supportive peer relations (Lieberman, Doyle, & Markiewicz, 1999). It can also serve as a protection against internalising and externalizing disorders (Pearce, Jones, Schwab-Stone, & Ruchkin, 2010). If an insecure attachment style develops (one that is anxious-ambivalent, avoidant or disorganised) it is possible to develop greater security through positive peer relations (Freeman & Bradford Brown, 2001) or with romantic partners (Mario Mikulincer & Shaver, 2003). Thus whilst there is substantial continuity of attachment style (Stroufe 2005) it is not fixed, and can change over time (Cameron et al., 2007).

Attachment style can be transmitted from parent (particularly mother) to the child (Ainsworth et al., 1978; Fonagy et al., 1994). This can be direct transmission through mother's parenting or through family context such as partner relationship and behaviour. Parents with insecure attachment are more likely to have a partner with an insecure attachment and these insecurely attached couples are more likely to have children with psychological disorder (A Bifulco, Moran, Ball, et al., 2002; Antonia Bifulco et al., 2009; Marinus H van IJzendoorn & Kroonenberg, 1988; van IJzendoorn & Bakermans-Kranenburg, 1996; M H van IJzendoorn, Sagi, & Lambermon, 1992).

Insecure attachment, can set the YP up for a lifetime of seeking security (Allen, Moore et al. 1998) and the child may face a lifetime of difficulties in forming relationships and maintaining social supports (Schimmenti & Bifulco, 2008). Such insecure attachment style can also lead the individual to being vulnerable to emotional problems (Shaw & Dallos, 2005) and internalising and externalising disorders. Arbona & Power found that insecure attachment led to low self-esteem and more behaviour problems in adolescents (Arbona & Power, 2003).

Bowlby describes the YP with an insecure attachment style as seeing the world as "*comfortless and unpredictable, and they respond either by shrinking from it or doing battle with it*" (Bowlby, 1973, p. 208). An insecure attachment style is consistently linked with having depressive or anxiety symptoms in

numerous studies (J P Allen et al., 1998; Armsden & Greenberg, 1987; Buist, Deković, Meeus, & van Aken, 2004; Cooper, Shaver, & Collins, 1998; Hughes & Gullone, 2008; Muris et al., 2001). The association of avoidant styles with externalising disorders is less clear, although some evidence found those with avoidant styles are more likely to have Oppositional Defiant disorder (Guttmann-Steinmetz & Crowell, 2006). In addition, disorganised styles (those associated with more chaotic infant responses to separation) are related to violence associated with externalising disorder (M H Van Ijzendoorn, 1997).

Secure attachment and supportive parenting in general help young people to find and form supportive peer relations (Dekovic et al., 2006). Higher levels of parental support was associated with better quality peer relations (Franco & Levitt, 1998). Freeman & Bradford Brown examined the relationship between secure/insecure attachments with parents and with peers. Adolescents with secure attachment to mother figure rated her as their main source of support particularly if they did not have an intimate partner. Having an intimate partner meant the mother shared the spot as the primary source of security. For those with insecure attachment, 90% rated their peers as the primary source of support (Freeman & Bradford Brown, 2001). Poor peer relations, however, if they are unsupportive or bullying, have been shown to contribute to disorder (I M Goodyer, Cooper, et al., 1993; Rigby, Slee, & Martin, 2007). There has been a good deal of research on attachment styles cross-culturally (see van Ijzendoorn for review). Whilst prevalence of secure attachment style is fairly constant (around 60%) rates of anxious-ambivalent or avoidant vary substantially across national boundaries. For example avoidant style is more common in Israel and Japan and anxious is more common in Western Europe (Marinus H van Ijzendoorn & Kroonenberg, 1988).

2.5b Quality of parenting and adolescent mental health

Poor quality parenting is also a significant risk factor for disorder in adolescence and at other life stages. As described earlier, there are a number of reasons why parenting is poor in some families including the parents own

early upbringing, their lack of support from partner, the amount of stress they are under, and related factors such as their own psychological disorder (Belsky, Fearon, & Bell, 2007). Hughes and Gullone's systematic review on family systems and disorders found that young people who had depressive or other psychiatric symptoms often had parents who also had psychological symptoms at the same time (Hughes & Gullone, 2008). The meta-analysis by Connell & Goodman examined how mothers and fathers psychological disorder influenced a young person's disorder. Mothers who suffered from depression or substance abuse had a strong effect on their child's mental health from infancy to adolescence. Father's mental disorder was found to influence older children's disorder due to their increasing involvement. This analysis also found that a child/young person mental disorder had a reciprocal effect on the mental health of the parents (Connell & Goodman, 2002).

The style of parenting contributes to a young person's mental health. Baumrind defined styles of parenting into authoritative, authoritarian and permissive with the authoritative being the optimum (Baumrind, 1971). Authoritarian parenting involves controlling and punitive parenting, whereas permissive includes overly relaxed style which can also be neglectful. Authoritative is a balance between creating boundaries and providing a safe, loving place to grow. Similar concepts have been operationalized in the Parental bonding instrument (Gordon Parker, 1979; Gordon Parker et al., 1997) to reflect care and control with affectionless/controlling parenting having the most impact on adolescent mental health. Hughes and Gullone's review on family systems relationship to adolescent mental disorder found that parent/adolescent relationships that have poor or hostile communication, and less warmth contribute to internalising disorder (Hughes & Gullone, 2008). Moreover, parents that are cold, neglectful and/or controlling towards their child, can increase their risk of internalising disorders (Buist et al., 2004; Buschgens et al., 2010; George, Herman, & Ostrander, 2006; Gerard & Buehler, 1999; I M Goodyer, Cooper, et al., 1993; I. Goodyer, Wright, & Altham, 1989; Rigby et al., 2007; Stein et al., 2000; Weissman, Leckman, Merikangas, Gammon, & Prusoff, 1984).

When a parent is systematically coercive, the YP may lose the ability to form their own judgements and seek approval indiscriminately from others about values and appropriate behaviour (Beyers & Goossens, 2008). Buist found a reciprocal relationship with adolescents who have unsatisfying relationships with their parents. They may act out and become aggressive and this behaviour becomes habitual and ingrained which further impacts on their relationship with parents and peers (Buist et al., 2004).

The literature on parenting overlaps with the literature on neglect and abuse (Belsky, 1993; A Bifulco, Moran, & Ball, 2002; Chambers, Power, Loucks, & Swanson, 2001; Reitz, Dekovic, & Meijer, 2006; Schimmenti & Bifulco, 2008). Thus, there is extensive evidence to show that neglect, physical, sexual or emotional abuse in childhood sets up substantial risk for disorder in adolescence and over the life-course (A Bifulco & Moran, 1998). This impacts on both internalising and externalising disorder (Aunola & Nurmi, 2005; Barnow, 2005; Dwairy, 2004; Grant et al., 2006; Gordon Parker et al., 1997; Reitz et al., 2006; Schimmenti & Bifulco, 2008). It is not always clear in the literature the extent to which the impact of poor parenting is as a marker for the more extreme of neglect or abuse behaviour, or whether poor interactions with parenting with non-optimal levels of care and control are also harmful in their own right. However, it is increasingly difficult to study neglect and abuse in children in the population because of ethical issues about intrusiveness. This is potentially even more pronounced in cross-cultural studies and in different religious groups. For this reason, the study reported here focuses on poor parenting rather than neglect or abuse. Parenting within the two cultural groups studied is examined below.

2.5c Attachment style and PTSD

Insecure attachment style is shown to increase vulnerability to traumatic or stressful events, for depression and conduct disorder (Antonia Bifulco & Thomas, n.d.) as well as for PTSD-related symptoms (Nader, 2011). However the literature on insecure attachment style and PTSD is relatively sparse. One study showed that having a dismissive and fearful attachment

style related to more PTSD symptoms in a group of 328 university students, most of whom were female, who had experienced a traumatic event. In turn, having a secure attachment style protected against PTSD symptoms in the same group (O'Connor & Elklit, 2008). Another study found that attachment style was associated with dissociation of trauma (avoidance of painful memory) and again secure attachment related to significantly lower dissociation) when adolescents were exposed to traumatic events (Nilsson, Holmqvist, & Jonson, 2012). An Israeli based study found that having an insecure attachment style was related to risk of PTSD in adolescents exposed to trauma (Qouta, Punamäki, Montgomery, & El-Sarraj, 2007). Other approaches have argued that disturbances in attachment style related to trauma, particularly that emanating within the home such as abuse, constitute complex PTSD. Here the insecure attachment style is a concomitant of the abuse but whether it functions as a risk factor or part of the disorder itself is debated (Ardino, 2011b). In young people, isolation and detachment are related to both trauma and insecure attachment style, and both in turn to chronic trauma (Nader, 2011). For the study reported here, insecure attachment style will be viewed as a risk factor for both PTSD and other disorders.

2.5d Attachment in Israel

Israel has been a particular focus of attachment research, in part because of the experience of children raised in Kibbutzim. Here rates of insecurity were found to be somewhat higher than in families, but it was also apparent that children found a primary caretaker to be attached to (Sagi et al., 1995). Rates of insecure attachment style in Israeli infants show 45% were insecure in comparison to a USA sample of 35% (Sagi et al., 1995). Whilst there is longstanding debate about how well attachment theory works cross-culturally, an extensive review by van Ijzendoorn and colleagues suggests consistency in rates of insecure style across culture, although the type of style expressed differs (M. H. V. Ijzendoorn, Kroonenberg, & Url, 2011). There are precedents for using established attachment instruments in research in Israel (M Mikulincer et al., 1999). In fact Israel is a central focus for much of the

research on stress, affect regulation and attachment style as indicated by Mikulincer and colleagues.

The same team have shown political conflict to have effects on attachment style and behaviour (M Mikulincer et al., 1999; M Mikulincer & Selinger, 2001). In addition, differences between communities in Israel were investigated in terms of parenting behaviour and Arab youth found to be emotionally closer to their parents than Jewish youth. However, Arab young people in Israel also reported their parents as being more strict (Mario Mikulincer, Weller, & Florian, 1993). Another Israel based researcher, Ricki Finzi Dottan and colleagues, examined the attachment style of abused/neglected school-aged children compared to non-abused children (Finzi, Har-Evan, Shnit, & Weizman, 2001). They found that being abused/neglected resulted in insecure attachment style, a finding consistent with research in Western countries (J P Allen et al., 1998; Antonia Bifulco et al., 2006) . Further, the children in Israel that were abused were also more physically aggressive compared to neglected and non-abused children (Finzi et al., 2001). There has however been considerably less study of attachment style in Arab young people.

Arab culture defines itself by its collectivist nature, in that the nuclear family and extended family is more important than the individual (Dwairy, Achoui, Abouserie, & Farah, 2006; Mario Mikulincer, Weller, et al., 1993). Literature on parenting in Arab culture views Arab culture as more controlling, particularly for girls and this is reported to have a positive effect for young people in that culture. Indeed, Mikulincer's study comparing Arab and Jewish youth found that Arab children, particularly girls, had more rules imposed on them. In addition, Arab girls and boys were closer to their mothers than were Jewish youth (Mario Mikulincer, Weller, et al., 1993). Dwairy described the controlling behaviour of parents in Arab culture as an influence over acceptable social behaviour, marriage, occupation and political beliefs (Dwairy, 2004; Dwairy et al., 2006; Dwairy & Menshar, 2006). Arab children, in turn, are reported to be more orientated to, and sensitive to, their elders than to the desires of their peers than other cultural groups. However, overly

controlling parents or parental rejection has a negative effect on the mental health of these young people, consistent with findings in the Western world. Both were found to be deleterious to YP's mental health (Dwairy, 2004; Dwairy et al., 2010).

When comparing differences in parenting between cultures in the Middle East, the mother's parenting was found to relate more to adolescent mental health in Arab cultures compared to father's behaviour (Dwairy et al., 2010). This had gender implications with a related study finding that females living in villages experienced more depression as a result of authoritarian parenting. Girls living in urban areas exhibited more conduct disorder behaviours than their rural counterparts (Dwairy & Menshar, 2006). Based on Dwairy's extensive studies on mental health in Middle Eastern cultures, it would seem that young people associate more closely with parents and family members than peers. However, the relationships between parenting and mental health seem to parallel those found in Western based literature.

2.6 PTSD in Israel

PTSD is known to be higher in areas of political conflict, due to the higher rate of non-personal trauma events such as bombing, terrorist violence, intimidation etc. As described in chapter 1, Israel at the time of the study could be categorised as a post-conflict zone given the recent bombing with Lebanon which affected the population in the North of the country. Thus higher rates of trauma related both to bombing, and deaths of close others is likely to be found. This has been an on-going aspect of research in Israeli and Palestinian research in order to understand psychological harm to its populations. As in other studies, research particular to the Israeli/Palestinian region found that the number of traumas predicted symptom severity (Musallam, Ginzbury, Lev-Shalem, & Solomon, 2005; Pat-Horenczyk, Doppelt, et al., 2006; Qouta et al., 2007; Thabet, Abed, & Vostanis, 2002) with PTSD rates highly correlated with war related trauma (Saigh & Green, 1996; K Salmon & Bryant, 2002).

Estimates of PTSD in the general Israeli population vary. One study of households found 9.4% met criteria for full PTSD and 58.6% reported depressed feelings (Bleich, Gelkopf, & Solomon, 2003). In this study, being female, not feeling safe and substance use were predictors of greater psychological difficulty (Bleich et al., 2003). For adolescents living in the Gaza Strip, PTSD rates were noted to be as high as 68.9% (Elbedour, Onwuegbuzie, Ghannam, Whitcome, & Abu Hein, 2007), with rates of 54% also quoted (Thabet et al., 2002), an extraordinarily high rate by Western standards. Very high rates of anxiety (94.9%) and depression (40%) were also reported (Elbedour et al., 2007). However, issues of measurement and disorder classification need to be considered in comparing rates across different settings. In a school based study in Jerusalem and local settlements of 1,010 children undertaken by the CHERISH team, only 6.6% fulfilled criteria for PTSD, but a much higher rate of adolescents (67%) reported feeling high levels of fear, helplessness and horror (Pat-Horenczyk, 2005a). Schiff and colleagues working in Jerusalem, Tel Aviv and West Bank found a similar rate of PTSD (4.6%) and this was higher in those living in a more volatile zone (Schiff, Zweig, et al., 2007).

Higher rates of exposure were noted in a screening of Israeli junior and high schools during the 2002-7 period. After screening over 4,000 students aged 11 to 19, 50% reported that they either they had been directly exposed, or someone close to them (i.e. a friend or relative) had been directly exposed to political violence. The criteria for exposure included: having been present at a terrorist attack with or without being physically injured or knowing a close friend or relative who was injured or killed in such an attack; having been near the site of a terrorist attack, having been there just before or after an attack, or having planned to be at the site of an attack. The rates for full PTSD and major depression were 6.6% and 8.6% respectively (Pat-Horenczyk, Schiff, et al., 2006). Thus it can be seen that emotional response to exposure to trauma affects the majority of young people but that full blown disorder affects only a minority,

The literature on gender and PTSD in Israel parallels literature from other countries. In one study, girls were found to have more somatic complaints, and boys complained of functional impairments (Pat-Horenczyk, 2004). Gender differences were noted in specific symptoms of PTSD with 62.5% of girls and 50.4% boys reporting re-experiencing of events, and 43% of girls compared with 38% of boys reporting hyper-arousal symptoms. However, the full PTSD disorder showed no gender bias but more girls (9.7%) experienced related symptoms of severe depression compared to boys (7.5%) (Pat-Horenczyk, Schiff, et al., 2006). Depression is well known as having a female preponderance both in the West and cross-culturally (Bramesfeld et al., 2006; P M Lewinsohn et al., 1998). Qouta and colleagues found that the known gender difference in disorder was exacerbated by exposure to political violence with girls even more vulnerable to depression and anxiety whereas boys became even more aggressive and prone to externalising symptoms such as conduct disorder (Qouta et al., 2007). Lev-Weisel et al found that the patriarchal society which girls lived under which included family violence and oppression further impeded the mental health of girls (Lev-Wiesel, Al-Krenawi, & Sehwal, 2007).

On the other hand, Khamis's study with school aged children living in the East Jerusalem and West Bank found that PTSD was more common in older adolescent males, particularly those living in refugee camps (Khamis, 2005). Garbarino and Kostelney (1996) also found that boys were more vulnerable to mental health problems in comparison to girls. They reasoned that confining social roles broke down with political violence due to unstable male supervision (due to imprisonment, high unemployment and decline in status) and thus girls were given greater responsibility and freedom in and outside the home which improved their self-esteem. Boys needed parental structure and rules to foster coping and suffered when they were eroded (James Garbarino, Kostelny, & Dubrow, 1991).

In summary, PTSD is a disorder that arises due to exposure to a traumatic event among individuals susceptible due to prior existing risk through lack of support, low self-esteem and insecure attachment style). Traumatic events,

their proximity and severity influences the intensity of the emotional response and degree of PTSD symptoms resulting. Young peoples' ability to cope with traumatic events is dependent upon several factors which include family structure, attachment style, and availability of support. Finally, PTSD prevalence overall and in relation to gender in Israel was presented. The next section will discuss resilience factors.

2.7 Resilience

Resilience is outlined in chapter 1, and denotes factors which allow for normal development, and lack of disorder, despite adversity or difficulty being present. One of the most commonly found resilience factors is social support and this likely to be related to both pro-social behaviour and secure attachment style. These are described below.

2.7a Pro-social behaviour

Young people who have good communication skills tend to have more confidence and higher self-esteem (J P Allen et al., 1998; Laible et al., 2004). Moreover, they believe they have good social skills and relationships which further inform their inner beliefs and promotes well-being (J P Allen et al., 1998; Laible et al., 2004). Good communication skills are known to assist young people to negotiate sexual relationships with peers (House, Bates, Markham, & Lesesne, 2010). Burt and colleagues undertook a 20 year longitudinal study to understand how social competence relates to internalising and externalising behaviours from childhood into adulthood. They found that good social skills were an intervening variable for internalising and externalising disorders. They also found that social competence influences peer relationships which in turn, influence these same disorders. Moreover, good social skills was linked to positive development over the lifespan (Burt, Obradović, & Long, 2008). The family is the initial source of learning positive communication skills. A child learns to interact positively and develop healthy relationships via their parents (Engels, Finkenauer, Meeus, & Dekovic, 2001). These skills help to form the inner working model of an adolescent and further

promotes well-being (J P Allen et al., 1998). This study will focus on pro-social behaviour as a potential resilience factor. This concept includes caring for others, with items such as being helpful if others upset, sharing with others and being nice to others (Scourfield, John, Martin, & McGuffin, 2004).

2.7b Social Support

Social support is defined as “*information from others that one is loved and cared for, esteemed and valued, and part of a network of communication*” (pg 300)(Cobb, 1976). It can be sourced from friends, family, teachers, and other role models. Whilst some studies examine support in terms of networks, others taking an attachment approach look at the quality of the relationship and the capacity for close confiding, emotional support and felt attachment (A Bifulco, Moran, & Ball, 2002). Such support is argued to moderate the impact of adversity and trauma and thus reduce likelihood of disorder.

Perceptions of having support can act as a buffering factor in dealing with traumatic events and stress (Punamäki, Komproe, Qouta, El-Masri, & de Jong, 2005). Punamaki and colleagues compared perceived social support between adults maltreated as children and adults exposed to military violence in Gaza (Punamäki et al., 2005). They found that perception of support was related to childhood experiences. If a person was mistreated as a child, they became mistrustful of others and immune to the compensatory effects of social support. The perception of not being supported made them more vulnerable to psychological problems. In comparison, those that had only experienced military violence were able to perceive the support given to them and thus experienced high levels of social support (Punamäki et al., 2005).

The presence of psychological conditions such as PTSD, depression and anxiety may also impact on the perception of, and willingness to, access social support. Elbedour and colleagues found that adolescents suffering from PTSD, depression and anxiety chose not to seek guidance and support (Elbedour et al., 2007). Schiff and colleagues noted that Jewish adolescents exposed to on-going conflict reported lower levels of social support. Social support was compensatory but not protective in relation to exposure to conflict

and those who had high social supports experienced lower rates of PTSD and depression (Schiff, Pat-Horenczyk, & Peled, 2007).

2.7c Parental care

Garbarino and colleagues (1996) studied Palestinian families and found that positive family relationships helped children cope with the effects of unstable, unpredictable, environments (James Garbarino & Kostelny, 1996). In turn, lack of parental support and poor family functioning related to developmental problems, particularly when combined with other risk factors such as low socio-economic status, age, gender and community breakdown (James Garbarino & Kostelny, 1996). The unstable environment, however, had a liberating effect for girls because their normally confined roles were expanded to include teaching younger siblings (due to inability to access education). Moreover, their mother's role also expanded to include more freedom outside the home which provided a positive role model for girls. Boys, on the other hand, suffered from watching their father's role as supporter and protector erode as many men were left unemployed, were humiliated in front of their families and were beaten or imprisoned (James Garbarino & Kostelny, 1996).

Punamaki and colleagues (1997) also found that whilst good parenting was positive overall and helpful for the child, it could not completely buffer the effects of political violence nor prevent psychological distress and this distress increased with the number of exposures. Poor parenting, in addition to political violence, resulted in further psychological distress (Punamaki & Qouta, 1997).

Schiff and colleagues looked at parental support in terms of the whether or not they encouraged or discouraged their adolescents to continue on with normal activities despite risks of exposure to terrorist attacks. They found that adolescents who felt supported by parents to continue on with normal activities had less incidence of PTSD however parents tended to be more protective of girls than boys (Schiff, Pat-Horenczyk, et al., 2007).

Self-esteem, peer relations and support and the degree to their absence or presence are other factors that influence a young person's mental health. These factors will now be discussed in relation to their risk or resilience aspects.

2.7d Positive factors and PTSD

The presence of positive factors can act as a buffer in coping with traumatic events. Such factors identified in the research literature are: social support (Collishaw et al., 2007), perceptions of support and self-efficacy (Ford, 2009) and positive family environment (Ozer & Weiss, 2004). How a young person copes with the trauma also influences their outcome. Those that use problem solving or distraction to ease symptoms are shown to do better than those who are emotion focused (Zeidner, 2005).

The ability to recover from trauma is determined by an individual's sense of safety and stability, secure social networks and well-formed attachments, and an ability to express what has happened (Brom, Horenczyk, Ed, & Bifulco, 2010). If a child has a poor attachment to a caregiver, which has developed into a more insecure interpersonal style, then a traumatic event may be particularly difficult to cope with because their fixed response to stress is amplifying or dissociative and there is no close carer to influence the affect regulation (Cairns, 2004).

2.8 Exercise and positive mental health

One of the aims of this study is to examine the impacts of a cycling program on mental health. Thus, it is important to examine literature pertaining to how sports and exercise programs are used to alleviate mental health conditions. Much of this research is in the adult population as clinicians explore broader therapeutic options to help their patients. Numerous studies exist on using sport and exercise to aid in dealing with symptoms of depression. Salmon (2001) undertook a literature review on the effects of focused exercise programs on depression, anxiety and ability to deal with stress and found ambiguous results. A positive effect was found for those who suffered from mild depression. This review found the strongest link was between exercise

and building the individual's adaptation to stress. Exercise was reported to be physically stressful but strengthened their ability to deal with stress overall. Exercise also lessened functional complaints associated with depression and the added social component of exercise improved mood (P. Salmon, 2001).

In a similar review comparing mental health and exercise, Paluska and Schwenk found that improvements for depressed mood were related to the how exercise diverted attention from negative thoughts and improvement in feelings of self-efficacy, self-mastery which improved individual's ability to manage stress. The social aspect related to exercise also assisted in improving mood (Paluska & Schwenk, 2000). However, this review found no proof of exercise as a primary mediator for alleviating symptoms. A review of literature of exercise's therapeutic relationship with psychiatric diseases by Meyer and Broocks (2000) found inconclusive evidence. These studies measured effects through biochemical changes in those involved in endurance exercise. Improvements could not be directly linked to exercise and participants expectations of the effect skewed results (Meyer & Broocks, 2000). One of the mechanisms examined is how prolonged rhythmic exercise is known to activate the opiod system and release endorphins. These endorphins regulate blood pressure, reduce pain and regulate body temperature (Thoren, Floras, Hoffman, & Seals, 1990). It is also suggested that these endorphins improve mood and this is the connection between how exercise may improve mental health conditions (Ströhle, 2009).

In a review focused on exercise and clinical depression, Brosse & Colleagues (2002) found inconclusive results and noted that exercise may have two pathways of effects: biological and psycho-social. For the purpose of this review, the psychosocial elements will be outlined. Changes were measured using self-evaluations and found that exercise improved feelings of self-efficacy, body image and self-worth. Exercise's social support component and ability to distract from negative thoughts were also noted mechanisms for improvement (Brosse, Sheets, Lett, & Blumenthal, 2002).

2.8a Sport/exercise and disorder

Few studies exist on the link between exercise and emotional or behavioural disorders in children and adolescents (Larun, Nordheim, & Ekeland, 2006). Sport was however, found to have a slight impact on dealing with conduct disorder behaviours and this was due to behaviour modification efforts through increased supervision and consequences placed on bad behaviour (Bohnert & Garber, 2007). There was similarly little evidence for sport being investigated in relation to anxiety and depression in adolescents (Larun et al., 2006). Larun and colleagues noted that studies that were published were of low methodological quality and were highly heterogeneous in terms of the intervention, measurement instrument and the age group studied and concluded that the evidence was too small to make any strong conclusions (Larun et al., 2006).

In terms of reducing risk factors, one study on how sport improves coping skills for at risk youth found physical activity buffered the effects of family conflict on depressed mood and the effect was particularly strong for girls (Sigfusdottir, Asgeirsdottir, Sigurdsson, & Gudjonsson, 2011). Involvement in sports is believed to influence self-esteem through improving physical competence in certain skills. This feeling of competence also has a reciprocal effect by causing the YP to want to continue on with the sport to improve skills further. The increasing participation further improves skill level which leads to an increase in self-esteem (Alvord & Grados, 2005; Richman & Shaffer, 2000). This higher self-esteem, coupled with participation in a sport, was reported as protecting YP from adopting unhealthy behaviours such as drug or alcohol abuse (Ferron, Narring, Caueray, & Michaud, 1999). A Cochrane review looking at exercise as a means of improving self-esteem in children and adolescents found that exercise improved self-esteem for a short period of time, the effect was small but significant (Ekeland, Heian, Hagen, Abbott, & Nordheim, 2003).

A Cochrane review was undertaken parallel to this thesis to see if other studies existed that examined the effects of sports and games to alleviate PTSD, but none were found (Lawrence, De Silva, & Henley, 2010). Thus,

sport and exercise's ability to reduce symptoms of PTSD is not clear and is one of the core questions of this study. In addition, few empirical studies exist on the use of sports to alleviate mental health symptoms in conflict/post-conflict settings. Henley and colleagues highlighted the key articles on how participation in sports helped adolescents to deal with stressful situations (Robert Henley et al., 2007). Sport was noted to improve self-esteem, and self-efficacy thereby improving children's resilience to adverse situations. These changes were said to be facilitated by social supports such as a coach who taught skills in teamwork, fair play and social skills; develop problem solving skills and manage emotions (Robert Henley et al., 2007) .

There are very few studies on how sports programs reduce the impacts of PTSD for children and adolescents and none exist for young people living in conflict post-conflict settings (R. Henley, 2005). Hammerstein and colleagues studied adult soldiers preparing for combat and found a possible link between sport and PTSD (Hammermeister, M, McGraw, & Ohlson, 2012). Sport did not have a direct influence on reducing PTSD symptoms, rather the link was through training and participating in the sport built mental resilience and this in turn influenced PTSD. Participating in sport builds confidence, self-efficacy, promotes goal setting and focus – these, in turn, build a person's perception that they can withstand adversity because they've practiced these skills while participating (Alvord & Grados, 2005). Thus, it is in the building of resilience skills where sport plays a role. The use of sport to deal with stressful events is argued to be through allowing individuals to develop and nurture talents and provide a means of distraction from negative thoughts (Alvord & Grados, 2005).

Manger and Motta (Manger & Motta, 2005) also used a resilience model and posited that exercise helped to manage symptoms of PTSD through the mechanisms of improving self-esteem, and self-efficacy. Their study of 26 adults and a 12 session exercise program found PTSD symptoms decreased after the participating in the program. There is only one study that examines sport and PTSD in adolescents. Newman and Motta (2007) compared 15 adolescents who were involved in an 8 week exercise program to see if the

program alleviated depression, anxiety and PTSD symptoms. Symptoms of PTSD reduced for the participants although the small sample size restricted the reliability of the findings. The authors speculate that the mechanism for improving symptoms lay in building self-efficacy, decreasing arousal symptoms and providing positive reinforcement (Newman & Motta, 2007).

In summary, the relationship between sports and mental health has a weak link as shown mainly in adult populations. Evidence suggests that exercise may have a bio-physical effect on health and strength and a psychological affect which include improved feelings of self-worth, effectiveness and ability to deal with stress. In addition, improvements in social support arising from participating in the sport also increased positive mood and wellbeing. The link is however less established for children and youth because there is less empirical evidence to prove any relationship, despite the fact that sports interventions are popular and aimed at strengthening mental health in children and adolescents. This is clearly an area which requires further research.

2.9 Study Aims and Research Questions

On the basis of the theoretical approach outlined and the literature review, this study aimed to determine the mental health status of YP living in socially-deprived, post-conflict settings in Israel across Jewish and Arab groups. It also aimed to examine the inter-relationships between social Ecological risk factors (deprivation, ethnicity, peer relationships) and psychological Attachment risk factors (low self-esteem, insecure attachment style and childhood parental care and control) on the severity and type of psychological disorder in the young people. It also focused on positive factors, specifically pro-social behaviour and support and on the absence of symptoms, as potential resilience factors in the context of adversity. In this light it will examine the impacts of a cycling intervention on improving self-esteem, building support, and alleviating psychological symptoms.

The specific research questions are:

- 1) Is psychological risk, background of poor parental care, low self-esteem, insecure attachment style, deprivation and trauma exposure associated with

higher levels of symptoms across different disorders? Is this similar in both study groups?

2) Do positive factors such as support, pro-social behaviour and having a secure style of attachment relate to lower rates of disorder? Can this serve to protect against poor parental care in childhood?

3) Does a cycling intervention reduce risk factors (such as low self-esteem) and increase resilience factors (such as support) and reduce symptom levels?

As described earlier, the group to be studied included boys and girls in early adolescence, the target (cycling) group was high risk as evidenced by their social service involvement and being co-opted for the intervention. The comparison group was selected from areas of high deprivation as a suitable comparison group. Both groups involved Jewish and Arab young people. In order to meet the aims and answer the research questions the study involved the evaluation of an existing intervention scheme, with emerging constraints and opportunities posed not only by the difficulties of working cross-culturally, but also due the intervention already being in place. The study was thus designed to be flexible while working cross-culturally in three different languages, with limited resources and in a difficult conflict location with high levels of suspicion across the communities included. An iterative style of design allowed for flexibility in determining both the target and comparison group composition and selection, as well as the descriptive part of the study looking at associations between risk and resilience factors and disorder at the first contact with the youth.

In designing the study, initially, a randomised control trial design (RCT) was considered with the Cochrane review undertaken to examine previous literature and consider the feasibility of such a study (Lawrence et al., 2010) (See Appendix 5). As no RCT's had been conducted on sports and PTSD, it was clear there was a research gap in this area. However, considering the challenges of undertaking an RCT cross-culturally in a post-conflict zone, also raised considerable challenges and a less rigid design was ultimately chosen.

The RCT design has traditionally been accorded great merit in the medical research field and is derived from testing the effectiveness of pharmaceutical treatments for different disorders. It has the advantage of providing carefully controlled, reliable and repeatable results on pure samples of individuals typical of those with the disorder treated, in order to exclude confounding variables for greater generalizability to the whole population. The random selection of a conventional RCT of participants to the target and control group is intended to eliminate selection bias, and the careful matching of participants allows for smaller numbers than would be required from applying statistical controls post hoc. Thus RCT's improve accuracy in establishing relationships between variables by isolating key variables from each other and determining relatively 'pure' groups for study (Stephenson & Imrie, 1998).

However, RCT's have been criticised for their limited application in naturalistic community settings where random allocation, for example of schools or communities, is not feasible. Moreover, setting up pure study groups in complex social settings is still difficult to achieve and requires enormous resources in terms of time, money, work and participant cooperation to implement such a strategy(Oakley et al., 2003; Stephenson & Imrie, 1998).

With these cautions noted, and acknowledging the complexity of the population and context plus limited resources, it was clear early on in the study design that an RCT could not be conducted. The evaluation of an existing cycling intervention was therefore examined in relation to a loosely matched comparison group and considered exploratory in its conclusions. Random selection was not possible because the adolescents in the existing cycling intervention group were referred to the cycling program via the Social Welfare Department and there was no access to a similar group without such intervention. There was effectively no 'waiting list'. The target adolescent's families were experiencing a variety of challenges from drug/alcohol abuse, poverty related issues and difficulties with parenting. The aim was therefore to find a comparison group which also had general indicators of social disadvantage, who lived in the same area and were from the same ethnic and

religious background, to make the groups relatively similar in order to compare and identify impacts of the intervention.

Since it was not a carefully controlled RCT study, sufficient numbers were required for a statistical analysis which could control for extraneous factors. This was potentially problematic given the limited size of the cycling groups to start with and the possibility of high level of drop-out, or failure to track at follow-up. Smaller numbers reduce statistical power (West, Biesanz, & Pitts, 2000). However, the use of reliable measures with established indices and cut-off scores, minimizing attrition as much as possible, and keeping the implementation of the intervention stable optimises statistical power on smaller sample sizes. Whilst these latter factors were all applied, there were challenges in finding enough young people for a robust sample size. While efforts were made to reduce attrition, the sports intervention was designed primarily for leisure and enjoyment and did not have clearly determined outcome points which may have compromised its suitability for a research intervention. Due to situational constraints in terms of location, lack of resources and language, the final study design therefore utilised a cross-sectional and prospective design, with repeat self-report measures using a 'convenience' target group and loosely matched comparison group from the community. All YP in the nationally dispersed cycling programme were first selected in given areas and then the comparison group was selected from community outreach programs and schools in the same areas.

These factors were all taken into consideration when designing the study which could answer the research questions and yet was feasible in this cross-cultural, conflict setting. The full design and sample selection is described in the next chapter.

2.10 Summary

This chapter outlined the literature on adolescent development, risk, resilience and psychological disorder to be examined in this study. After outlining normal development in adolescence, emotional, behavioural and PTSD disorder were

all defined and risk factors derived from both Ecological and Attachment approaches were examined in relation to the research literature. These included material deprivation and trauma as well as poor parental care and control in childhood, low self-esteem, problem peer relations and insecure attachment styles. Most of these have been identified as risks for all the disorders outlined. These experiences were then discussed in relation to the Israeli context and in Arab and Jewish communities where the study took place. Resilience was then examined in terms of positive outcomes in spite of adversity, and pro-social behaviour and social support outlined. This led to the description of interventions, particularly those involving sports in reducing risk and emotional, behavioural and PTSD symptoms. This chapter finished with a presentation of the aims, research questions and the approach taken to the intervention. The following chapter will present the Methods used to answer the research questions posed.

Chapter 3: Methods

3.1 Introduction

This chapter describes the study design, participants, measures and procedures used in this investigation. This study uses both a cross-sectional (at first contact) and prospective design with measures repeated, using a high risk target group of young people (YP) involved with social services offered a cycling intervention, and a loosely matched community comparison group. A local researcher who spoke Arabic, Hebrew and English was hired to assist with all phases of the research project.

3.2 Study Design

Following a pilot pre-study period, the study was in two phases, phase 1 examining the psychosocial risks, resilience and psychological disorder in Israeli youth in the target group, comparison group and total sample, and phase 2 following the youth over a 9 month period to examine changes in scores following a sports intervention when compared with the comparison group without the intervention. Repeat questionnaires were used for data collection in phase 1 and 2 of the study, with mixed methods in phase 2 utilising focus groups with the YP and coaches/teachers, and interviews with sports coaches. An outline of the study is provided in the table below.

Table 3.1 Outline of RIRD study

	Time	Participants	Procedures	Data collection	Focus of analysis
Pre-Study pilot	January 2007 January 2008	Young people from YMCA program	Ethical clearance Hiring of local researcher Questionnaires translated	Pilot study testing questionnaires	Questionnaire adapted from feedback from pilot
Phase 1	February 2008 to June 2008	YP from One to One cycling programs and comparison group	Distribution of questionnaires in groups.	Questionnaires completed and date-entered for analysis reflecting psychological, social risk and resilience factors and disorder	Target cycling group and comparison group examined for loose matching. Analysis of risk and resilience cross-sectionally.
Phase 2 follow-up	Sept. 2008 to January 2009	Target cycling and comparison group followed up after 9 months	Repeat questionnaires administered. Focus groups with target group, interviews with coaches	Questionnaires re-administered and data entered for analysis Focus groups and interviews recorded, transcribed and translated for analysis,	Questionnaire data examined for change in follow-up. Focus groups and interviews analysed for experience of intervention.

As well as the repeated questionnaires, qualitative data was collected through focus groups (4) held at the end of the data collection to ask the young people to discuss their experiences. In addition, interviews (4) were conducted with the coaches and cycling group organisers to look at the implementation of the cycling intervention. Only standardised questionnaires were used, and these were translated into Arabic and Hebrew and back-translated prior to data collection. Preference was given to ones used before in Israeli research. The interviews and focus groups were held either in English (with the coaches who were English speaking) or in Arabic/Hebrew with the help of a local tri-lingual researcher and these recorded, transcribed and translated prior to analysis.

3.3 Participants

The study involved 108 YP aged 12-16 from North Israel, just over half of whom (N=60) were participating in a pre-existing cycling programmes and the remainder (N=48) who lived in the same areas, selected through schools and leisure clubs for similar demographic characteristics but who were not involved in the cycling.

The study involved the use of high risk young people. This was dictated by the young people in the cycling programmes who were referred by social services because of problematic family circumstances. Therefore, the selection of a comparison group also required high risk status in terms of family circumstances. The high risk nature of the sample can be helpful for an analysis in that more individuals will score on risk indices and symptom scales and thus entail smaller numbers, but has the drawback of not being representative. In quantitative epidemiological research, representative sampling allows findings to be generalized to the rest of the population with similar features (eg of the same age or class). This cannot be claimed from a highly selective group and so findings from the cross-sectional analysis need to be treated with some caution as not necessarily representative. However given the focus of the study evaluating an intervention for high risk youth, the sampling procedure adopted was considered appropriate.

This study uses purposive sampling as “information-rich cases” (pg 52)(Patton, 1987) based on existing cycling intervention groups and a comparison group from the same areas and of the same age. The sample for the study includes adolescents from diverse communities both Jewish and Arab in Israel. Whilst many of the target cycling groups was from one or other community (although one of the five was mixed) the comparison group sought equal proportions from the two ethnic groups.

3.3a The target cycling group

This was made up of adolescents recently referred by social services to a cycling program, in different areas and cycling clubs. The young people in the cycling program were selected by the Department of Social Welfare because of instability in their home environment and/or familial, socio-economic factors. The procedure involved the Department of Social Welfare, referring families to Mercas Cohav, a community based agency, who then offered identified families and YP after-school activities to increase opportunities for psychosocial support. Baseline figures of numbers of families involved were not available, so it was not possible to gauge the take-up rate of the offer of cycling groups, but numbers indicate that the youth did engage readily and the cycling groups were all fully subscribed.

Below is a description of each cycling group.

Dalyat El Carmel: The cycling group at Dalyat El Carmel consisted of 16 Arab boys. These boys started the cycling in the summer of 2008, took a break for the religious holidays and returned in the autumn of 2008. These young people all took part in both phases of the study.

Kfar Menahim group : This group of 8 Jewish boys lived in group housing in mid-Israel for the year they participated in the cycling program. During the study, this group home undertook a large change in management and all the young people were discharged from the home into the community without notifying the researchers. These young people were unfortunately not traced for follow-up.

Beit Shemesh: The cycling group at Beit Shemesh was a mixed gender group that lived in a mixed community of Arabs and Jews in the middle of Israel. These YP participated in the cycling from the winter of 2008, took a summer break and returned in the fall of 2008. Girls did not start participating in the cycling until the autumn of 2008 thus they were not part of the study. Ten boys participated in the study at both phases.

Netanya: The cycling group at Netanya included 18 boys, predominantly Jews, and ran from March 2008 to June 2008, and many returned in the autumn of 2008. The coordinator for this group provided minimal help to track

down the YP to fill out the follow-up questionnaires so there was attrition in the follow-up numbers.

Joulis: The cycling group at Joulis consisted of 8 Arab boys who commenced cycling in February 2008, took a summer break and many returned in the fall of 2008 so were involved in both phases of the study.

3.3b The comparison group

These young people were selected from local schools or out-reach programmes, checking they were not involved in any after-school sports intervention or cycling in order to form an effective comparison group to the target intervention group. Care was taken to select YP from the same areas as the cycling groups, in the same age group and ethnic mix. The locations meant that they YP were likely to be similarly deprived to enable effective comparison. However, it was not possible to match them individually to the target group.

Beit Shemesh comparison group: These 9 Jewish YP were from a school in Beit Shemesh. The teacher was very helpful and supportive of the project and assisted with administering the questionnaires. This teacher retired at the end of the school year in 2008. When it came time to do the follow-up questionnaires, the new teacher was not as supportive of the study and refused to answer or return calls. She finally relented in January 2009 and allowed the researchers to administer the questionnaire to the young people. Therefore these young people were represented in both phases.

Ma'aleh Yoseph comparison group: This group of 15 Jewish boys originally planned to participate in the cycling but did not finally join and they were used for the comparison group. They were followed up through contact with their school principal.

Kofr Sme'ih: One Arab YP from the Northern town of Kofr Sme'ih was recruited through social work contact but was lost at follow-up.

Eilaboun comparison group: Twenty three male and females from the pilot study were traced and therefore included as part of the comparison group and were represented at both phases. They were Christian Arabs.

Numbers included in the study are given in table 3.2

Table 3.2 Numbers involved in the study

Group	Phase 1 YP Qs	Phase 2 YP Qs	Phase 2 Coach Interviews	Phase 2 Focus Group YP
Cycling	60	34	4	4 groups - (35 in total)
Comparison (incl. 23 from pilot)	48	28	-	-
Total	108	62	4	4 groups 35 YP

3.4 The data collection procedure

The cycling programs began at different times from February 2008. By June 2008, all the 9 cycling groups had been given questionnaires for Phase 1. This included 60 young people. The comparison groups were more difficult to find due to a country wide school strike which ended in February 2008. It was also impeded by reluctance to engage on the part of social workers and schools who were approached. Attempts to find more participants reached into the summer of 2008. Before the summer, there were 25 YP who had completed questionnaires in the comparison group and even though much effort went into finding more YP, no others could be recruited. During the summer months, schools were shut down and Social services worked less due to holidays and thus finding more comparison young people proved impossible. It was decided at this point to stop looking in order to allow time for the 9 month time gap for the prospective part of the study. In order to increase numbers, 23 YP from the Eilaboun pilot study were included and followed up.

The follow-up data collection was initially set for September 2008 but was postponed until November 2008 because of the numerous Jewish and Muslim holidays in September and October which meant that all the schools and community programs were shut. Whilst the researcher was reassured by

cycling organisers that the YP would continue on with the cycling programs in the autumn, in fact, a number were lost over the summer of 2008 when the cycling groups were disbanded for the summer break.

Then in December 2008, while the second phase of data gathering was underway, Israel began a series of air-strikes against Gaza. The country was thrown into conflict mode and sides were quickly taken which resulted in a rippling out of rage, horror, mistrust, anxiety, and pain across the entire of Israel. Data collection was halted until the bombing slowed down in mid-January because the sites were within a 40 mile radius of where bombs were dropping. Data collection was resumed in mid-January 2009 and completed end of January 2009.

3.4a Attrition at follow-up

There was a 45% attrition rate at follow-up. This means that statistical power was lessened (see analysis below) and findings need to be interpreted with caution. Low number mean that some differences between groups identified may not reach significant levels. There is also the possibility of bias with those not being followed up having worse or better disorder outcomes (Higgins & Altman, 2008) .

There were several reasons for the loss of YP from the study at follow-up mainly around difficulties in tracing them:

1. Moving the follow-up scheduling to November of 2008 rather than September 2008 due to large number of religious holidays and subsequent school and community settings shut down. Unfortunately, this led to members of the cycling group being impossible to locate when disbanded for the summer break.
2. Lack of cooperation with teachers at follow-up for the comparison group when there was a change in teacher.
3. Discharge of group from group home: As noted in the description of the sample, one of the cycling groups lived in a group home. The group home underwent a change of management and the YP were discharged into the community and the social worker was unable to follow up on them.

The similarity of the group followed up and those not followed up, by status at first contact was examined in the analysis to check for drop-out affecting one group more than another. There was, however, no association of drop-out to group, ethnicity self-esteem or disorders at first phase. There were, however more males lost to attrition.

3.5 Measures

The study used a combination of quantitative and qualitative approaches. Quantitative data provide cross sectional data on demographics, prevalence of risk, resilience factors and disorder and follow-up data to examine change. Qualitative data provides a contextual element and combining the two can produce a more accurate picture of the cycling experience examined. However, due to the language and time constraints, it was not possible to use qualitative measures at first contact, only at follow-up after the intervention completed. Interviews with coaches at follow-up also helped to explain issues around implementation and benefits of the cycling intervention.

3.5a Self-report questionnaires

Self-report questionnaires were used for most of the data collection with the young people in this project as the most practical means of collecting information given language barriers and location and time constraints. They provided a suitably brief and flexible tool for collecting data in a non-intrusive and anonymous manner from the adolescents, and those measures with tested reliability and validity were selected. Moreover, questionnaires which have been used before in the Israeli context to determine risk and disorder were used where possible. For example, the CHERISH study working across the Israeli/Palestinian divide has investigated PTSD, depression and functional impairment rates with the use of standardised and translated questionnaires validated in the Israeli context some of which were adopted in this study (Pat-Horenczyk, 2004). Certain adaptations that had been made by that research group to reflect local context were also adopted. For instance, specific items were developed to screen for on-going exposure to traumatic events based on war/terrorist experience in the Israeli and Palestinian context

because other traumatic screening tools tend to screen for only one traumatic event (Pat-Horenczyk et al., 2004).

Self-report questionnaires are also commonly used in public health approaches to determine prevalence of symptoms and disorder in populations (Jones & Kafetsios, 2002). The questionnaires in this study were group administered to manage time and response rate and to provide opportunity for clarification when collecting informed consent. Whilst one setback of this style of administration is that respondents may be influenced by their peers (Palys, 1997) to counteract this, a researcher was on hand to supervise the adolescents and check these were completed independently.

3.5b Qualitative Measures: Focus Groups

Questionnaires do however have limitations with highly restricted response options and little reference to context, therefore additional qualitative measures were also utilised. It is said that “*qualitative research is a contact sport, requiring some degree of immersion into individual’s lives*” (pg 12)(Stewart, Shamadasani, & Rook, 2007). To gain greater ‘contact’ and ‘immersion’ with the target study group, focus groups were conducted with the young people involved in the cycling in order to find out more about their perceptions of the intervention and understand more about local context and the young people’s attitudes. Focus groups are acknowledged as a useful qualitative research method to clarify issues and gain additional information (Palys, 1997). Themes for the focus groups were selected in part to capture ideas and feelings not included in the questionnaire and secondly to allow for elaboration of certain aspects covered in the questionnaires.

Focus groups were run with 4 groups from the different cycling clubs, 1 of which had not started cycling. Each group included 9 to 11 children and 2 adults. They all volunteered to participate, and many were keen to do so. The groups were attended by the principal researcher, were facilitated by the local researcher, who spoke Hebrew and Arabic to ensure that the YP understood the questions and were comfortable with expressing themselves without being hindered by language difficulties. The coach or support person for that group

was also present to assist with clarifying ideas and supervising the groups. The focus groups were organized according to recommended guidelines for such as keeping a 2-year age range in the participants, asking age appropriate questions, having a suitable location with a good moderator and being friendly and welcoming (Krueger & Casey, 2000).

The moderator had extensive experience working with young people and ensured the discussion was maintained. The questions asked (see Appendix 2) were age-appropriate, non-intrusive and non-threatening and the focus groups were kept to a maximum of 45 minutes. The YP ranged in age from 12 to 14. Food was served and all groups were conducted in the community setting where the YP cycled.

The focus groups were audio-recorded, transcribed and translated. The moderator ensured the data was kept confidential and he maintained a trusting, open dialogue for the youth. He began each session by informing them of how the data was going to be used and reassured them that confidentiality would be maintained throughout the group and the analysis. During focus groups, the young people were asked to clarify points made. Ideas that emerged during the focus groups were probed further to gain further insight to provide an accurate reflection of the groups' thoughts and perceptions.

3.5c Interviews

Interviews were also utilised for the cycling intervention, as another means of gathering deeper understanding of the cycling experience from the adult coaches' point of view. The purpose of exploratory interviews is to allow us "to enter the other person's perspective" (pg 109)(Patton, 1987) through guided conversations. Interviews "*provide an in-depth exploration of an aspect of life to which the interviewee has substantial experience*" (pg 676)(Charmaz, 2002). They provide a firm platform for exploring the interviewee's thoughts, feelings and experiences. The interview questions were predetermined, with flexible schedules so that the interviewee's perspectives and experiences

emerged and further guided the conversation (See Appendix 3). It was important to understand what the facilitators of the cycling program thought of the intervention and its implementation thus interviews were conducted with 3 of the coaches in the One-2-One program in Israel. These were conducted in English by the principal researcher.

The coaches came from different backgrounds. One was a physical education teacher in a nearby school. Another was an active member of the Druze community. One of the coaches interviewed is the head coach of the whole program. The interview with the Beit Shemesh coach was impromptu and consisted of three short questions on his opinions of the program.

3.6 Research Instruments

3.6a Questionnaires

Overall, the questionnaires used for this study contained a mixture of single response items with Likert scales which combined into a score (eg Strengths and Difficulties Questionnaire), some categorical data (eg demographics) and one self-report with vignette choices (Relationship Questionnaire). The symptom questionnaires for emotional/behavioural and PTSD disorders had published cut-off scores for disorders and related risk factors which have been tested in Israeli and Palestinian populations. The symptom questionnaires were the main outcome variable used for the pre- and post- intervention testing to look for change.

For the first phase of the study (cross-sectional), questionnaires also reflected psychological and socio-environmental risk factors selected on the basis of the literature review. These are outlined in table 3.3 and then described in detail below. The reliability of the scales in published form, and as determined by this project are also outlined. Cronbach's alpha is used to detect internal consistency of items in the questionnaire by estimating the average of the relationship between the items. Questionnaires that measure just one construct are expected to have a Cronbach's alpha of .7 or higher to shown

high internal consistency and reliability. However, those measuring multiple constructs are acknowledge to be somewhat lower with .60 or 0.65 considered acceptable (Furr & Bacharach, 2008; Todd & Bradley, 1996).

Table 3.3 Summary of Questionnaires

<p>Disorder scales</p> <p>UCLA-PTSD Index for DSM-IV-child version (Pynoos, Rodriguez, Steinberg, Stuber, & Frederick, 1998) to measure Post Traumatic Stress Disorder</p> <p>Strengths and Difficulties Questionnaire (Goodman, 2001) (Emotional, Conduct and Hyperactive disorder).</p> <p>Psychosocial risk scales</p> <p>Demographic questionnaire (social class, religion, cultural background etc)</p> <p>Measure of Exposure to Terrorism (Objective and Subjective)(Pat-Horenczyk, 2005b)</p> <p>Self Esteem (M Rosenberg, 1965)</p> <p>Relationship Questionnaire (Bartholomew & Horowitz, 1991)</p> <p>Problem peer group (from SDQ)</p> <p>Parental bonding Instrument (Gordon Parker, 1979) (Phase 1 Only)</p> <p>Life events questionnaire(Wills et al., 2001) (Phase 2 only)</p> <p>Resilience scales</p> <p>Social Support (CECA.Q) (A Bifulco, Bernazzani, Moran, & Jacobs, 2005)</p> <p>Prosocial behaviour (from SDQ)</p> <p>Well-being indicator (low symptom score, from SDQ)</p>

UCLA-PTSD Index for DSM-IV-child version (Pynoos et al., 1998)

The UCLA-PTSD Index for DSM-IV is a self reported, multi-attribute measure of post traumatic stress. The Index uses 12 items to assess types of traumatic events, 13 items to assess initial reactions and 20 items to assess ongoing symptoms. The items outline the witnessing of 12 traumatic events such as car accidents, physical and sexual abuse, and homicides. The items in the instrument are linked to clinical DSM-IV criteria of which there are four (ABCD) for diagnosing full PTSD. Criterion A captures the type of trauma and feelings associated with the trauma. Criterion B involves the re-experiencing of the event, Criterion C involves avoidance of the event and D increasing arousal/hyper-vigilance.

Scoring of symptom levels involve summing the 22 symptom items, with higher scores indicating higher severity of PTSD symptomatology (Rodriguez, Steinberg, Saltzman, & Pynoos, 2001a). The UCLA-PTSD Index has been translated into several languages including Hebrew and Arabic and has been used in Israel to screen for PTSD (Pat-Horenczyk, 2005a). This self-reported tool has, on average, a 0.82 convergent validity with the clinician-administered version (Rodriguez, Steinberg, Saltzman, & Pynoos, 2001a, 2001b). The Cronbach's alpha for internal consistency in the UCLA-PTSD Index falls in the range of 0.90, and its test-retest reliability is 0.84 (Roussos et al., 2005). In a previous Israeli study, the internal consistency was similarly satisfactory (Cronbach's Alpha=0.90) (Pat-Horenczyk, Abramovitz, et al., 2007). When the internal reliability of the scale was tested for the data collected in this study, the alpha was 0.90.

In order to broaden the trauma inclusion suitable for study in post-conflict zones, an additional measure of Exposure to Terrorism was added (see below). This meant that the full A1/ A2 criteria could be reduced given the pilot phase highlighted the importance of reducing the length of the questionnaire to aid with full completion by the YP. The symptom sections (Criteria B,C and D) were asked in full with the focus on the stress symptoms experienced considered critical in line with other research views (Brewin et al., 2009). Using partial A criteria means that a full diagnosis of post-traumatic stress

disorder cannot technically be made on the basis of the UCLA PTSD RI criteria. This is highlighted as a potential limitation of the study. Using partial PTSD below clinical level is suitable for community samples where a public health rather than clinical investigation is the focus.

Measure of Exposure to Terrorism (Objective and Subjective)(Pat-Horenczyk, 2005a)

The Measure of Exposure to Terrorism tool was developed in Israel to determine exposure to traumatic events specific to the Israeli context. Items ask participants to respond 'yes' or 'no' to eight statements including: "I was present at the site of a terrorist attack or hurt". It is combined with 5 items relating to feelings and reactions to terrorist attacks. The more times the respondent answers yes to items, the higher the severity of exposure to traumatic events, and therefore higher possibility of PTSD. These items were previously used in another Israeli study (Chemtob, Nakashima, & Hamada, 2002) . The tool has been translated, back translated and has a high internal consistency in its previous use in Israeli studies (Cronbach's alpha= 0.90). When the internal reliability was tested for this study, an alpha of 0.76 was obtained.

Strengths and Difficulties questionnaire (SDQ)(Goodman, 2001)

The SDQ is a self-report measure to screen for the presence of Conduct, Hyperactivity and Emotional disorder. In addition it includes items for problems with peers and positive social behaviour. It has been widely used in the UK for detecting disorders in children and YP and is the only tool to be tested in a national survey to determine population disorder rates in the UK. It consists of 25 Likert scale items, with 5 statements for each disorder or behaviour. There is a total score which indicates global difficulty, but then each component disorder e.g. Hyperactivity, has a summed score and an established cut-off point. The score indicates if a 'normal', 'borderline' or 'abnormal' i.e. clinical level of symptomatology is reached. The SDQ has shown good reliability and validity. Its internal consistency as determined in UK studies is satisfactory (mean Cronbach alpha 0.73) and its test-retest

stability after 4-6 months is 0.62. Scores accurately detected psychiatric diagnosis when compared to clinical interview diagnosis. For this study, the Cronbach's alpha was calculated as 0.63 for the total difficulties score. Whilst this is rather below the usual acceptable level (eg 0.70) for a single construct, its lower level may reflect the number of disorders covered. The usual solution of deleting items to improve internal consistency was rejected since the measure uses carefully tested items to constitute disorder and using the established cut-off scores was considered more important than the internal reliability. However, this rather low internal reliability is acknowledged as a potential limitation of the study

The SDQ has not been used in Hebrew before but has been previously translated into Arabic (Goodman, 2001). In this analysis, the presence of Emotional disorder, Conduct disorder and Hyperactive disorder at case or borderline level were taken as the main dependent variable. Overall disorder in this analysis constitutes the presence of either Emotional, Conduct or Hyperactive disorder at borderline level or higher unless otherwise stated. Again these levels were considered suitable for a community sample where such levels indicate impairment and a cause for concern, although not at full clinical levels.

Peer problems – this involved items concerning how well the child integrated with peers involving lack of popularity – this was included as a psychosocial risk factor in the analysis.

Prosocial behaviour – this involved items concerning the child's altruistic and social behaviour. This was included as a positive and potential resilience factor in the analysis. **Wellbeing** - A low score on symptoms was used to denote well-being. Given the high risk nature of the sample, the subgroup with very low symptom scores may be considered protected in some way. Whilst this index has not been used this way before with the SDQ, this approach has been used with the adult General Health Questionnaire to denote wellbeing (Jackson, 2007). The same procedure was adopted here.

Rosenberg's Self-Esteem Scale (M Rosenberg, 1965)

This scale has 10 items and measures global self-esteem and typically used in general population samples. Originally developed in New York State, USA on a sample of over 5,000 adolescents, it has since been widely used with adolescents and adults and has demonstrated good reliability and validity (Gray-Little, Williams, & Hancock, 1997). It has been translated into 53 different languages and tested for its cultural validity across a range of cultures. In Israel, the scale has been translated and back translated into Arabic and Hebrew with internal reliability and consistency for both very high (Cronbach Alpha 0.90 and 0.82 respectively) (Schmitt & Allik, 2005). The internal consistency determined on the self-esteem scale for this study was alpha of 0.79. The 10 items reflect 5 positively and 5 negatively phrased items rated on a 4 point scale (strongly agree, agree, disagree and strongly disagree). For the overall score half the items are reversed so that all can be summed to indicate high self-esteem (M Rosenberg, 1965). Whilst no cut-offs have been published for the scale, it is common to use the bottom quartile (ie scores below 25%) to indicate low self-esteem. A cut-off was determined in the course of the analysis using the extreme quartile on the full scale to denote low self-esteem.

Parental Bonding Instrument (G Parker, Tupling, & Brown, 1979)

The Parental Bonding instrument measures a child's retrospective perception of their parent's care and control in their first 16 years. The 25 item scale contains 12 'care' items and 13 'control' items and measures mother and fathers separately. The care and control scales are scored separately, but are also combined to derive the four parenting styles of Optimal parenting (high care, low control), Affectionate constraint (high care and high control), Affectionless control (low care and high control) and Neglectful parenting (low care and low control) (G Parker et al., 1979). There is high internal consistency and good test-retest reliability for the published scale also found in several Israeli based studies for adults (Canetti & Bachar, 1997; Diamond et al., 2005). The Cronbach's alpha calculated for the PBI in this study was 0.75 for care and 0.66 for control. Again it was decided not to delete items for the

control scale in order to raise the internal consistency a few extra points, given the importance of the published cut-off scores. In this analysis, the separate indices of maternal and paternal care and control were derived, as well as the affectionless-control index for either parent, the one most linked to disorder in previous publications.

Relationship Questionnaire (Bartholomew & Horowitz, 1991)

The Relationship Questionnaire is a self-report measure that determines four attachment styles based on four vignette descriptions. These descriptions represent one secure style and 3 insecure styles (dismissing, fearful and preoccupied). The respondent is asked to rate on a 7-point scale the degree to which each style resembles him or herself. The final item asks which style is most like them. Usually this last item is used to denote the overall style, but scores on each of the vignette scales can also be used to form dimensional scales and a sum of scores of insecure styles can be used for an overall insecure score (Bartholomew & Horowitz, 1991). The relationship questionnaire has been found to have good construct validity (Griffin & Bartholomew, 1994) and its concepts transfer across cultures (Schmitt et al., 2004). The questionnaire has not been used with Israeli youth before. Given the use of the overall choice of scales in the analysis, an internal consistency test was not applicable.

Childhood Support (A Bifulco et al., 2005)

A questionnaire of childhood experience (CECA.Q) has been derived from an interview measure of neglect and abuse in early life, which also includes items on childhood support which are utilised for this study. The full questionnaire was not utilised since the issue of questioning about childhood abuse in such contexts was considered ethically insensitive. The support questionnaire items asks respondents if there is positive adult or peer support present in their lives i.e. "Are there teenagers your age that you can discuss your problems and feelings with?". Respondents answer 'yes/no' and then choose from a list of possibilities i.e. sisters, brother, relative, close friend or other. If respondents answer 'No' to most or all of the questions then the respondent is considered to be lacking in social support. In the analysis the number of support figures or

role models was summed. Given the categorical nature of the measure, not internal reliability test was possible.

The Negative Life events Inventory: (Wills et al., 2001)

The Negative Life Event Inventory is a 20 item checklist of negative life events based on previous inventories of adolescent life events. The respondent must indicate whether the event had occurred during the previous year using a dichotomous (yes- no) response. Events range from family illness, parent losing a job, breaking up a girlfriend. The internal consistency for the entire scale was noted to be .67 (Wills et al., 2001). In this study, the Cronbach's Alpha was .39.

3.6b Focus groups Questions

Questions for focus groups centred on the experience of the cycling intervention with some of the survey data responses used to inform themed questions. These are outlined in Appendix 2. They include 9 questions on leisure activities and experience of the cycling intervention and one general question on their response to danger in the community. The questions were kept simple and few in number in order to be easy to answer for the group. The focus groups were time- limited to 30 to 45 minutes suitable for this age group. These were audio-recorded and transcribed with the agreement of the group.

3.6c Interviews Questions with coaches

Interview questions were selected based on the coaches' experience of implementing the cycling interventions and the perceived effects on young people participating. (See interview questions Appendix 3). This included perceived benefits of the cycling, details on their role as coaches, characteristics of the YP who participated and about gender and cycling.

3.7 Procedures

3.7a Ethical permission

Ethical requirements of this study needed to consider the young age of the participants and any sensitivity around investigating young people from different ethnic backgrounds in a politically and religiously volatile context. Permissions were sought from agencies where the young people were recruited and full information provided about the aims and methods of the study prior to recruitment. Ethical permission was granted from the University Ethics Committee at Royal Holloway, University of London. This required assurance of the anonymous collection of data, secure storage of data, and use of informed consent from the young people and parents (See Appendix 4). Information sheets and consent forms were translated in to Arabic and Hebrew and provided prior to questionnaire completion, interview or focus group. Whilst confidentiality was guaranteed, and no names or addresses recorded on any questionnaires, all of which were identified by number, a coding procedure was put in place in order to match questionnaires from phase 1 to phase 2. In the analysis itself, interview and focus group quotes were referenced solely by number and by whether cycling or comparison young person, or coaches/ teacher adults.

3.7b Questionnaire translation and piloting

Questionnaires require some adaptation to suit different cultural and language contexts with the importance of back-translating questionnaires to standardise the meanings of words and use of idioms and colloquial language in translation recommended (Lee, J. More, & Cotiw-an, 1999). Pilot testing is also recommended for determining whether measurement constructs are equivalent across cultures, whether items are correctly understood and the administration of the instruments is feasible (Lee et al., 1999). Therefore, all questionnaires not previously utilised in Israeli studies were translated and back translated into Hebrew and Arabic. (The terror related questions and the UCLA PTSD Reaction Index had been translated by other researchers). The translation was undertaken by a tri-lingual research assistant living in Israel and paid by the One to One charity funder to be involved in the project. The translations were then checked and back-translated into English by a

professional translator. Differences in words used were agreed by consensus of the two.

The questionnaires were piloted on a group of 30 young people living in Eilaboun, and feasibility determined by the time taken, the young people's views on ease of completion, and the identification of any clear 'errors' or omissions in item response. On the basis of the pilot study, the questionnaires were slightly revised as indicated below.

The pilot test indicated that the questionnaire pack was too long and some effort was made to shorten it. (Thus for example the SDQ impact supplement and some items of the PTSD Reaction Index criteria A2 were reduced). Some English words and phrases required careful adaptation in Arabic in order to capture nuances i.e. 'feeling jumpy' or 'grouchy' as terms of emotional upset needed adjustment. The local researcher assisted the children with any difficulties during the administration of the questionnaire pack. Some translation difficulties were found, for instance, in the Parental Bonding questionnaire (for example parent being 'cold' was not understood, and many children asked for clarification). The subsequent wording was adapted. The subsequent finalised questionnaire pack was then administered in group settings to both target and comparison groups, and then again (using key measures) at follow-up after 9 months (See Appendix 1). The sessions were aided by the local researcher who spoke the local languages, and snacks and drinks provided to help encourage the young people to stay and complete the questionnaire pack.

3.8 Power calculation

It was necessary to undertake a power calculation to see what numbers would be required to undertake both phases of the study in order to ensure the possibility of significant effects. The power calculation was undertaken using G*Power, an online power and sample size calculator ⁶. The expected association and derived effect size of variables calculated from previous

⁶ (<http://www.psych.uni-duesseldorf.de/aap/projects/gpower/>)

studies in relation to disorder were utilised. In addition, the expected effect size of the cycling intervention taking into account other types of sports interventions was also estimated. The power calculations below on selected associations of risk and disorder are illustrative using two key risk factors of parental care in childhood and low self-esteem. In the case of the intervention the calculation is based on rather sparse data given the dearth of research available.

3.8a Power calculation for cross sectional phase 1 of study

Parental care in childhood: The expected association and derived effect size of risk factors and disorder was calculated using a previous study which looked at depression and parental bonding in adolescence. The effect size was calculated from Stein and colleagues (2000) study of parental care and control using the PBI and major depression (Stein et al., 2000). This found that depressed children had significantly poorer maternal care than non-depressed (OR=3) with similar figures for father (OR=2.5) Higher ratios were obtained for affectionless-control indices. A conservative effect size of 0.63 was calculated. Using the estimated effect size of .63, the sample size required to reject the null hypothesis at this effect size is 52.

Self-esteem – The expected association and derived effect size of self-esteem and emotional disorder was calculated from a previous of young people (MacInnes, 2006). Using means and SD comparing self-esteem in a depressed and non-depressed group an effect size of 0.8 was calculated⁷. The required sample size to reject the null hypothesis in this study was calculated to be 32.

3.8b Power calculation for prospective phase 2 of the study

There are very few similar studies of sports interventions to assess effect size of the intervention on disorder. In order to assess numbers required to show significant effects in the cycling group and comparison, the only other similar study on sports interventions and young people's wellbeing by Steptoe and Butler was utilised (Steptoe & Butler, 1996). This showed a small to medium effect size of .12. To achieve a similar effect size, the total sample size of the

⁷ <http://cognitiveflexibility.org/effectsize/>

present study would require 122 respondents. Whilst this number was not achieved with the possibility of under powering the statistical analysis, it was hoped that using a range of both risk and symptom changes as potential outcomes would have higher effect sizes and require more modest numbers. However, this is acknowledged as a potential limitation of the study.

3.9 The analysis strategy

3.9a Data cleaning and missing data

In order to check data entry reliability, 15% of the data was rechecked by hand to determine the percentage of errors of data entry. A negligible error rate was found and therefore full double data entry not deemed necessary.

There were three sources of missing data in this project which need to be dealt with in the analysis. Missing items and missing sections

3.9b Questionnaire data analysis

SPSS-14 (Statistical Package for Social Science©) was used for analysing the questionnaire data.

The analysis of the questionnaire data was undertaken in the following manner:

- 1) Alpha coefficients were used to test internal consistency as described earlier.
- 2) Correlation tests (Pearson's r) were used to examine relationships between risk variables, and between risk and symptoms using full scale scores.
- 3) Chi-square statistic was used to examine differences between the two groups and to test dichotomous variables looking at disorder outcomes (for example peer problems and conduct disorder). Significance levels at $p < .05$ or below were utilised but those at the $p < .10$ level are also quoted due to small numbers and concern about Type II errors (failing to reject the null hypothesis when it is false). This can occur with small numbers where apparently large differences in proportion between groups may fall short of statistical significance thus masking a real difference. Reporting some findings at $p < .10$ level gives an indication of where a potentially important finding may have been missed to inform

future research studies. Chi-square statistic was also used to examine change in dichotomous risk and disorder variables at follow-up and between groups.

4) Binary logistic regression was used to model dichotomised disorder outcome and to find the most parsimonious fit of risk variables to disorder.

5) Mediation analysis was undertaken to test the specific Attachment hypothesis that attachment variables (such as insecure attachment style or problem peer relationships) act as mediating variables in the relationship between poor care and control in childhood (as an independent variable) and adolescent disorder (the outcome or dependent variable). This involves a three step logistic regression procedure identified by Baron & Kenny (Baron & Kenny, 1986) where all factors are related. This mediation analysis involves testing each of the variables (independent and potential mediator) against disorder and then the two together. Mediation is shown when the independent and dependent variable are no longer significantly related when the mediator is taken into account. Whilst mediation is really only proved in prospective analysis when the variables are differentiated in time, this analysis was undertaken on the first phase cross-sectional data in order to test whether the variables did relate as hypothesised. However, these can only be interpreted cautiously and required retesting in other prospective analyses.

3.9c Missing items

A small proportion of individual items in scales (e.g. under 5%) were missing because the YP skipped responding to that item. Since leaving this as a nil score would affect the overall indices, a value was added. In line with recommended practice and in order not to bias the overall sum of scores, the mean score across the sample for that item was inserted. This insertion allowed for the entire scale to be utilised without unduly biasing the total score.

3.9d Missing sections

1) A number did not complete one of PBI sections on childhood care due to loss of parent. This involved 8 YP who did not report on mothers and 24 who did not report on fathers. This means that for analysis of childhood scales the total numbers is lower than for the total sample.

2) A proportion of questionnaires at first contact had an incomplete section on attachment style. This occurred for half the comparison group and half the target cycling group and was accidental due to students leaving before completing the questionnaire. The section occurred at the end of the questionnaire, and using vignettes had a different format from the usual Likert scales which may be the reason why it was skipped. This only came to light subsequently and it was impossible to retrace the YP for completion. In order to check whether the missing information may have been non-random, those with the missing sections versus those with full data were compared on various measures. This analysis showed no differences in missing sections by group, by gender, by ethnicity, symptom scores (SDQ or PTSD) or self-esteem. Therefore, it is unfortunately that analyses conducted for attachment style are based on only around half the sample which constrains the full extent of the analysis and the power of this scale.

3.9e Thematic analysis of Focus groups and Interviews

A thematic analysis was applied to both the focus group and interview data. This type of analysis involves the organizing, describing and interpreting of data already directed by the questions selected. Themes then comprise the framework to which the data is analysed (Braun & Clarke, 2012).

Alternative approaches using computer programs specifically used for text analysis such as NVIVO were considered but not adopted. These are useful for large amounts of exploratory data that requires coding and sorting by newly discovered themes to enhance marking and retrieval of text (Kruegar, 1998). For this study, the themes were narrow, predetermined by the focus on the cycling experience and thus amenable to grouping of relevant responses organized around questions asked. Care was taken to utilise in the quotes

reported a range of views expressed as well as to endorse those which were more consensual.

3.9f Triangulation

The findings from the coach interviews, focus groups and self-report cycling questions from Phase 2 all worked towards evaluating how the cycling helped the young people. There are several ways to triangulate data and this study uses a loose and exploratory triangulation of questionnaire data, thematic analysis of focus group and interview data to maximise information relevant to the cycling experience and its benefits.

3.10 Summary

The sample comprised 60 YP involved in 8 cycling clubs located across Northern and Central Israel with 48 young people in a comparison group of the same age selected from youth groups and schools in the same areas. The YP were followed up after 9 months in order to test change as a result of the cycling intervention. There was considerable attrition in both groups. For the cycling groups this was due to the groups being disbanded and dispersed in the summer without consulting the researchers and 34 completed follow-up questionnaires. In the comparison group, drop out was due to school strikes restricting access to schools and lack of cooperation of teachers - 28 were followed-up. Thus total figures were 108 at phase 1 and 62 at phase 2. Attrition was equal in the different groups, and among those with and without disorder, although somewhat higher for males.

Power calculations based on prior research indicate that the numbers are sufficient to undertake the cross-sectional analysis of risk and disorder in phase 1. However estimates for modest effect sizes of sports interventions suggest the prospective part of the study is underpowered since numbers over 100 would be required. Results therefore have to be considered tentative, with the expectation that actual change may not emerge as significant, indicating type II error.

A group-administered questionnaire using standardised and translated measures was used to determine demographic characteristics, psychosocial characteristics such as support, attachment style, low self-esteem and experience of trauma including bombing as well as disorder (emotional, ADHD, conduct disorder and PTSD). Internal reliability of the questionnaires was mainly acceptable. There was an issue of incomplete questionnaire sections on attachment style for around half the sample. Missing data on childhood experience occurred for YP who did not live with a parent when younger (32 in total).

In terms of qualitative data collected, interviews were undertaken with 4 cycling coaches and focus groups held for 4 cycling groups of young people, one of whom were about to start the intervention. This allowed for more in depth description of the cycling experience. Interviews were conducted with 4 cycling coaches to obtain their perceptions of the intervention, its implementation and benefits.

Data analysis utilised correlations to find associations between variables, chi square statistic for group comparisons and dichotomous tests of risk and disorder and changes between Phase 1 and Phase 2. Binary logistic regressions were used to determine the most parsimonious modelling of risks to disorder outcomes. They were also used for tests of mediation arising from attachment hypotheses. The focus groups and interviews were analysed using themes and content analysis.

The next chapter will examine the findings from the questionnaires outlined in this chapter in the first phase of the study.

Chapter 4: Findings from Questionnaire analysis- Phase 1

4.1 Introduction

This chapter gives the results of the quantitative analysis of the questionnaire data in phase 1 as measured at first contact. Two of the research questions will be addressed in this chapter:

- 1) Is psychological risk, background of poor parental care, low self-esteem, insecure attachment style, deprivation and trauma exposure associated with higher levels of symptoms across different disorders? Is this similar in both study groups?

- 2) Do positive factors such as support, pro-social behaviour and having a secure style of attachment relate to lower rates of disorder? Can this serve to protect against poor parental care in childhood?

The analysis moves from descriptive data analysis to modelling of disorder. First descriptive statistics (using frequencies) were used to determine prevalence rates of demographics, risk factors and disorder rates for the two study groups and the full sample. Some comparisons were made with published rates in UK and Israeli studies for comparability and to underline the high-risk status of the sample. Similarity of the cycling and comparison groups in terms of risk and disorder were examined in terms of suitability for the cycling evaluation. Chi-square statistic was used to look for any significant differences between the two groups.

Next, associations between risk factors, and risk factors and symptomatology were undertaken using correlations for full scores and chi square when variables were dichotomised to test for disorder outcomes. The social and psychological risk variables were examined in turn in relation to symptom scores and disorder subtypes for the combined group at Phase 1. Modelling of risk for disorder was undertaken with binary logistic regression to find the most parsimonious fit. This was also used in testing for mediation in the three stage process described earlier (Baron & Kenny, 1986). The analytic

procedure was repeated in testing positive factors in relation to wellbeing indicated by low symptom scores, as well as in terms of moderating factors for disorder.

The findings from the analysis are presented below. First a description of the sample is presented, followed by prevalence of risk factors, SDQ and PTSD disorders. Next, the associations between risk factors and disorders are examined. The second part of the chapter examines positive factors and potential resilience.

4.2 Description of the sample

In the total sample of 108 youth, there was a preponderance of boys in the sample (73%). The sample had only slightly more Jews (57%) than Arabs (43%), when using national distinctions. In terms of religion, in addition to the 57% Jewish, the remaining religious affiliations were - Christian (33%); Druze Islamic sect (22%) and Muslims (7%). Most of the sample had fathers in employment (83%) and more than half of the mothers were employed (60%). Around 18% had unemployed fathers. The average number of siblings was 3.8 with a range of 0-11. In terms of living conditions, only a quarter of the sample (24%) had 5 or more rooms in the house, with 45% having 3 or fewer. Half the adolescents shared a bedroom. However, most homes had telephones (average of 3), most had televisions (average 2.5) and most had computers (average 1.3). An index of deprivation was derived from three inter-related variables and included either father unemployed, or having 3 or fewer rooms in the house or bedroom sharing. This typified half of the entire sample. All the children had at least one parental figure in the home. Eight young people did not have a mother/mother figure in the home and twenty did not have a father/father figure in the home. There were three families with a stepfather and one with a stepmother. A quarter of the children were from single parent families. For 19%, mother alone ran the household and for 7% fathers alone. The absent mothers were from Jewish (5) or Christian (2) families.

In terms of ethnicity, Jewish mothers were significantly more likely to be working (74% vs.43% $p<.001$), and more of the Jewish fathers were out of work (23% versus 9% $p<.03$). Also, more Jewish fathers were not living at home (25% vs.11% $p<.05$). More of the fathers not living at home were also out of work (40% vs. 12% of those at home $p<.005$). There was no difference in family characteristics of those with absent mothers. No differences in rates of the deprivation index were found between Jews and Arabs. A third of the sample had 4 or more children, the largest family had 12 children but family size was unrelated to mothers working, study group or ethnicity.

The two study groups were compared to look for similarities with a view to combining them for analysis, and for reasons of comparability for Phase 2 of the study. The biggest difference was in gender as the cycling group was mainly male (97%) whereas the comparison group was just over half male (44%)($p<.0001$). There was no significant difference in religion although there were somewhat more Jewish adolescents in the comparison group and Druze youth in the cycling group. The average age in both groups was 12.9, both had the same proportion of father's in work and homes had similar numbers of computers. However, there was some evidence of the cycling group having more material disadvantage with smaller houses, shared bedrooms and somewhat fewer phones, although more TVs. The cycling group also had fewer working mothers. The index of deprivation showed the cycling group had double the rate (67% vs 29%, $p<.0001$). This is consistent with the social services selection criteria for the cycling youth with family difficulties, associated with social deprivation. In terms of family composition, whilst there were equal rates of single parent households, the cycling youth had fewer fathers at home (with 25% having mother only households compared to 10% in the comparison group (NS). The comparison group had fewer mothers at home with 15% having father only households compared to 2% of the cycling group ($p<.02$). The sample was combined for the remaining analysis, with group membership controlled in final analysis.

4.2a Prevalence of SDQ disorder

Borderline and case levels of Emotional, Conduct and Hyperactive disorder were examined in the sample as a whole using the SDQ published cut-off scores. 'Any disorder' in this analysis constitutes the presence of either Emotional, Conduct or Hyperactive disorder at borderline level or case level, unless otherwise stated. Prevalence rates are shown in Table 4.2. This shows 23% of the total sample of young people had SDQ symptoms at probable clinical case level with 33% with symptoms at 'borderline' level or higher. The most common type of disorder at borderline level or higher was Conduct disorder (31%). Emotional disorder was half as common (14%) with Hyperactive disorder least common at 7%.

In order to compare this study's rates with published rates in UK, the figures used in the published work were entered into a chi square together with the numbers derived from the present sample (see Table 4.1). It can be seen that all disorders were significantly higher in the current sample than the UK norms for teenagers attesting to the high risk nature of the sample (Meltzer et al., 2000)⁸. Rates were also compared with published national Israeli case level rates (Farbstein et al., 2010). In the present sample, case rates were 6.5% for Emotional disorder, 17.6% for Conduct disorder and 2% for Hyperactive disorder. Israeli teenage rates were 3.3%, 0.9% and 3% respectively using similar measures (Farbstein et al., 2010). This indicates the group studied is high risk compared to population norms. As discussed in Chapter 3, only scores for SDQ psychological disorders are utilised for clinical outcomes, peer group problems were analysed as a risk factor.

⁸ Graph Pad was used to determine the chi-squares of the published national prevalence data in relation to the figures used in this study.

Table 4.1**Prevalence of SDQ disorder compared to UK Rates**

SDQ case or borderline disorder	Study Sample % (n =108)	% Prevalence in UK*	χ^2 (1)	P<
Emotional disorder	14%	4.6%	11.83	.0006
Conduct disorder	31%	6.2%	95.41	.0001
Hyperactive disorder	7%	1.4%	21.13	.0001
Any disorder	33%	9.6%	88.43	.0001
Any case level disorder SDQ	23%	11.2%	74.69	.0001

* rates taken from Meltzer et al 2000.

4.2b Prevalence of SDQ disorder and gender

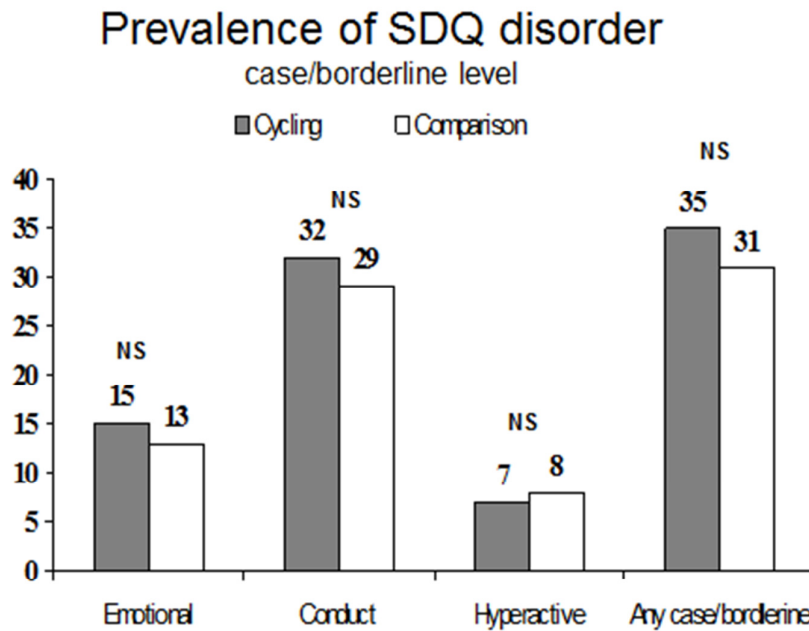
It is well established in the research literature that type of disorder is highly related to gender in teenage years with approximately 2:1 Emotional disorder in girls and 2:1 Conduct disorder in boys (see chapter 2). When gender was examined in relation to Emotional disorder in this sample, the expected higher rate was found in girls but at a non-significant level (21% or 6/29 versus 11% or 9/79 in boys, NS) or borderline case or above. When case levels were examined similar differences were found but again not significant at the 5% level (14% (4/29) girls versus 4% (3/79) boys (χ^2 3.5 p<.08). For Conduct disorder there was little difference at borderline level with slightly more females having symptoms (35% or 10/29 girls versus 29% or 23/79 boys, NS) but with the expected higher rates for boys at case levels but also non-significant (10% or 3/29 girls versus 20% or 16/79 boys, NS). There was little difference in rates of Hyperactive disorder at borderline level (7% or 2/29 girls versus 8% or 6/79 boys) or case level (3% or 1/29 girls versus 1% or 1/79 boys, NS). The rest of the analysis will be using borderline/case thresholds where there is greater gender similarity in disorder rates. The gender imbalance in the cycling group means that whilst controls for gender will be applied to the group as a whole there is insufficient statistical power to apply this to the cycling group. This is a limitation of the study.

4.2c Prevalence of SDQ disorder by Group

The prevalence of psychological symptoms and disorder was then examined in the two study groups. The groups were found to be similar in terms of rates

of disorder, with no significant differences as shown in figure 4.1. This is important in using the comparison group for the prospective intervention part of the study.

Figure 4.1 Prevalence of SDQ disorder by group



4.2d Prevalence of PTSD

PTSD disorder rates were calculated in order to examine the prevalence in the two study groups and overall. In order to look at subclinical levels the different sub-criteria were also examined. Clinical level of PTSD requires the presence of a traumatic event occurring and a distress response (A Criteria⁹) plus symptoms of B Criteria (Re-experiencing), C Criteria (Avoidance) and D Criteria (Hyper-vigilance). In the following analysis, all PTSD thresholds will be explored using partial PTSD and total PTSD indices (Pynoos et al., 1998) as well as the individual symptom criteria in relation to the trauma event. Partial PTSD is defined as being exposed to a trauma event, having strong feelings about the event (A criteria) and suffering from a combination of symptom

⁹ See chapter 3 for discussion of the reduced A1/2 items used in this study

criteria (A + Criteria (B+C) **or** (B+D) **or** (C+D) at a frequency level of 'most of the time'. Total PTSD is when all criteria are met (ie Criteria A+ B+C+D) at a frequency level of 'most of the time'.

In this sample, 31% of the youth had partial PTSD and 6% reached total PTSD levels (see table 4.2, column 2). When looking at symptom criteria, the highest rate (41%) was for B Criteria (Re-experiencing responses to trauma event), a third (33%) had D Criteria (Hyper-vigilance response to trauma event) with 15% having C Criteria (Avoidance relating to trauma event). Rates of these symptom clusters and of experiencing trauma events are compared to other published rates in Israel (Pat-Horenczyk, Abramovitz, et al., 2007) (see Table 4.13).¹⁰ Given somewhat different items concerning trauma/bombing were used in the Israeli study, direct comparison is not possible, but the criteria and total PTSD disorder give some indicative rates. It can be seen that the total disorder rates and exposure to bombing are no different, but that A- D criteria are all significantly lower in the present study. However, these rates were substantially higher than those reported in the UK, of 0.4% full PTSD(Howard Meltzer, 2007). This identifies the current group as higher risk than general population but not as high as other Israeli samples.

Table 4.2

Trauma exposure, PTSD compared to published Israeli rates

Event and disorder	% (n) Total n=108	% Prevalence in Israel ¹¹ * n=695	χ^2 (1)	P
Exposure to trauma event (7 items)	56%	NA	NA	
Exposure to bombing (6 items)	40%	32%	2.52	NS
Exposure to bombing or trauma	67%	NA	-	
Criteria A	40%	53%	9.47	.002
B Criteria (Re-experiencing)	43%	66%	11.41	.009
C Criteria (Avoidance)	15%	21%	7.83	.005
D Criteria (Hyper-vigilance)	35%	46%	14.15	.002
Partial PTSD	31%	NA	-	
Total PTSD	6%	8%	.06	NS

*(Pat-Horenczyk et al., 2007a)

¹⁰ Graph Pad calculations <http://graphpad.com/quickcalcs/contingency2.cfm>

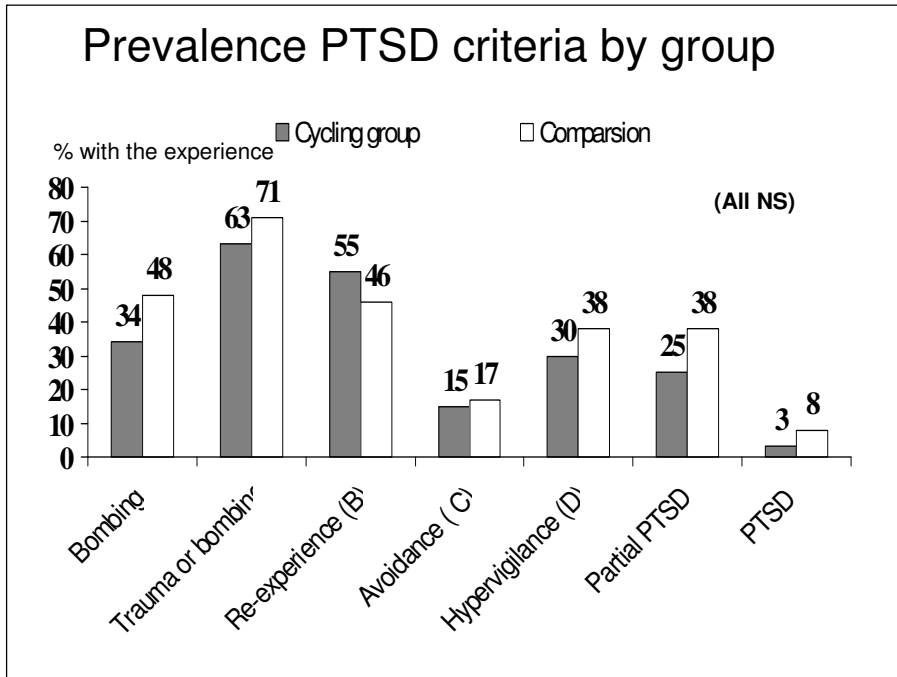
¹¹ In this study, events were combined

4.2e Trauma and PTSD Criteria by group

Rates of trauma exposure and PTSD in the two study groups are shown in Figure 4.2. It can be seen that there are no significant differences in experience in the two groups. However, there was a trend for the comparison group to have experienced somewhat more bombing and trauma events. It was therefore possible to combine the groups for the following analysis of PTSD without group composition playing a confounding role.

Figure 4.2

Prevalence of PTSD Criteria by group



4.2f Relationship between PTSD Criteria and SDQ Disorder

A cross-tabulation analysis was undertaken examining SDQ disorder and PTSD using dichotomised variables. The relationship between Any SDQ disorder and full PTSD approached significance (11% with SDQ disorder had PTSD compared with 3% without, $p < .09$), and Conduct disorder and full PTSD (12% and 3% respectively, $p < .06$). However, no relationship was found with PTSD and Emotional (6% and 5%, NS) or Hyperactive disorder (12% and 5%, NS). When PTSD criteria were examined, Any SDQ disorder and C criterion

(Avoidance) were related (19% with Any disorder had Avoidance compared with 6% without, $p < .02$) and Conduct Disorder was similarly related to C criterion (21% vs 5% respectively, $p < .009$). No relationship was found with the other disorders and the PTSD criteria. Thus, there was little evidence of comorbidity of SDQ and PTSD. These findings are inconsistent with published findings on SDQ emotional disorder, and having PTSD described in chapter 2. This difference may be due to low rates of emotional disorder in this sample, potentially related to higher rates of boys than girls included.

4.3 Prevalence of Risk factors

The prevalence of risk factors is presented in Table 4.3 below. There were no significant differences by group. These will be described in turn.

4.3a Self-esteem

A fifth of the sample (18%) reported very low self-esteem (using a cut-off 15 representing the extreme 25% quartile rated). Whilst the rate of low self-esteem in the cycling group was higher than the comparison group, (22% versus 13% respectively) this did not reach statistical significance (see table 4.3).

Table 4.3**Prevalence of risk factors**

Characteristics	Total sample n=108	Cycling group n=60	Compariso n group n=48	χ^2 (1)	P
Low self-esteem < 15	18%	22%	13%	1.53	NS
Peer problems	19%	20%	18.8%	0.27	NS
Attachment Style RQ (n=56)*					NS
A. Secure	59%	56%	63%	0.51	
B Fearful	14%	19%	8%		
C Enmeshed	20%	16%	25%		
D Dismissive	7%	9%	4%		
Insecure attachment (B or C or D)*	41% (23/56)	44% (14/32)	38% (9/24)	0.51	NS
Sum of insecure attachment score adding B-D scores (top percentile)*	36% (20/56)	35% (12/32)	36% (8/24)	.007	NS
Exposure to PTSD traumatic event	55%	58%	50%	0.74	NS
Exposure to bombing	40%	34%	48%	2.21	NS
Exposure to either PTSD or bombing	67%	63%	71%	0.67	NS

* Attachment style only rated on half the sample.

4.3b Relationships: Peer problems and attachment style

The prevalence of peer problems was examined in this sample. The cut-off score of 5 was utilised according to published SDQ criteria to determine high peer problems. Peer problems were experienced by 19% of the sample with no differences in rates in the cycling (20%) and comparison group (19%).

Attachment style using the RQ was analysed in two ways. First the overall style chosen by the young people from the 4 vignettes was used to characterise their style ratings of Secure, Enmeshed, Fearful or Dismissive (see table 4.3). Over half the young people (59%) had secure attachment style on the RQ when asked 'which style is most like you?' Of the insecure styles Enmeshed was the most common (20%) with Fearful and Dismissive styles having similar rates at 7%-8%. These rates are similar to other Israeli (Finzi et al., 2001) and US rates (Bartholomew and Horowitz, 1991b). The cycling group had somewhat higher rates of Fearful style but not at significant levels (19% versus 8% in the comparison group, NS) and Dismissive (9%

versus 4 respectively, NS), but lower rates of Enmeshed style (16% vs 25% respectively, NS). A second score of insecurity was derived by summing the scores rated for each insecure vignette style. This allowed a total insecure score over the insecure styles (range 3 to 18, mean of 9). The top quartile (75% score) was used as a cut-off, with a rate of 36% in the total sample. This did not differ by group with rates of 35% and 36% (NS). See table 4.3

4.3c Parental care in childhood

A third or more of the young people had problems with reported care or control from their parents in childhood using scale cut-offs taken from published sources of the PBI (see table 4.4). The most common problem reported was high control from both mothers (43%) and fathers (35%). When the combined index of affectionless-control (low affection and high control) is examined, 15% of mothers and 19% of father's were reported to have such poor parenting. These rate are similar to that found in a prior Israeli study (Canetti, Bachare, Galili-Weisstub, Kaplan De-Noura, & Shalev, 1997). The cycling group had more affectionless-controlling mothers and fathers than the comparison group, consistent with the social services selection criteria. Specifically the cycling group reported lower care from mothers and higher control from fathers than the comparison group.

Table 4.4

Prevalence of childhood risk factors

Characteristics	Total sample n=108	Cycling group n=60	Comparison group n=48	χ^2 (1)	P
PARENTAL Care and Control (Mother n = 100, Father n=84)*					
Mother low care	21% (21)	30% (16)	11% (5)	5.73	.01
Mother high control	43% (43)	47% (25)	38% (18)	0.80	NS
Mother Affectionless-control	15% (15)	23% (12)	6% (3)	5.16	.02
Father low care	25% (21)	33% (13)	18% (8)	2.29	NS
Father high control	35% (29)	48% (19)	23% (10)	5.68	.015
Father Affectionless-control	19% (16)	28% (11)	11% (5)	3.53	.05

*Missing data due to parent not having lived in household

4.3d Inter-correlation of risk factors

Inter-correlations of six of the main risk factors (index of deprivation, peer problems, low self-esteem, insecure attachment style and affectionless-control

in childhood) were examined (see Table 4.5). It can be seen that most of the variables were significantly inter-correlated with more details given below.

Table 4.5

Inter-correlation of risk factors (Pearson's r)

	Deprivation	Peer Problems	Self-esteem	Insecure Attachment score	Mother affectionless control	Father affectionless control
Deprivation	1					
Peer Problems	.16	1				
Self-esteem	.201*	.419**	1			
Insecure Attachment score	.281*	.16	.06	1		
Mother affectionless control	.12	.409**	.306**	.23	1	
Father affectionless control	.04	.415**	.364**	.318*	.659**	1

* 0.05 level (2-tailed).

** 0.01 level (2-tailed).

When the deprivation index was examined, it can be seen that it was correlated with self-esteem, insecure attachment score but not to peer problems or other childhood experience, apart from mother's low care, described above. Peer problems related to all childhood care/control factors and self-esteem but not to insecurity of attachment style. Since peer problems in the SDQ reflect being unpopular and not getting on with peers, further exploration was made of an item in the peer section of the SDQ reflecting bullying. A third (29/108) of the young people indicated they experienced bullying victimization. The total self-esteem score correlated with bullying (.34 $p < .001$) and a cross tabulation showed 58% (10/18) of those with low self-esteem experienced bullying, compared with 25% (22/89) of those with high self-esteem ($\chi^2 = 8.6, 1, p < .006$).

The insecurity of attachment score also correlated with the mother low care alone scale ($r = .32, p < .05$) When the dichotomized scoring of any insecure style was examined however by the dichotomized childhood factors, an additional relationship was found with father's high control ($r = .31, p < .03$) and a modest relationship with father's low care ($r = .25, p < .08$). However self-

esteem was not related to attachment style. This is inconsistent with findings in the literature (Bartholomew & Horowitz, 1991). This may be due to the low numbers with attachment style measured. Self-esteem was however associated with all other risk factors including childhood experience consistent with prediction. All the parenting variables were related to each other with mother and father's affectionless control being highly correlated ($r=0.6$, $p<.001$). When gender was examined in relation to all risk factors, no positive associations were found.

4.3e Ethnicity and risk factors

As part of the Ecological framework used in this study, and because the Israeli context defines its ethnicity as Arab or Jew, it was important to know how the group differed on risk factors and parenting childhood factors based on these definitions. However, there was no association between ethnicity and the concurrent risk factors of low self-esteem (19% Jewish vs 15% Arab NS), peer problems (16% Jewish versus 23% Arab NS) or insecure attachment style (37% Jewish versus 33% Arab NS). Rates were virtually the same in both Jewish and Arab young people.

However there were differences on childhood parental care by ethnicity with Arab young people having higher rates of any poor parenting: 76% (29/38) vs 41% (18/44), ($\chi^2 10.4, 1 p<.001$). This involved a high level of control from both mothers: 56% (25/45) for Arabs vs 33% (18/55) for Jews ($\chi^2 5.3, 1 p<.018$), and from fathers 56% (22/39) versus 16% (7/45) respectively ($\chi^2 15.4, 1 p<.00001$). In addition the Arab young people had lower care from father (39% or 15/39 versus 13% or 6/45 for Jewish young people ($\chi^2 7.1, 1 p<.008$). Therefore Arabs also experienced more affectionless control from fathers: 33% (13/39) versus 7% (3/45) for Jews ($\chi^2 9.7, 1 p<.002$). Thus, ethnicity needs to be controlled in final analysis.

Next, associations between risk factors and disorder will be presented, starting with PTSD and the looking at SDQ disorder. The results presented in this section are aligned with answering the first research question on risks and disorder:

1) Is psychological risk, background of poor parental care, low self-esteem, insecure attachment style, deprivation and trauma exposure associated with higher levels of symptoms across different disorders? Is this similar in both study groups?

4.4 Associations between risk factors and PTSD

Pearson's correlations were used to examine relationships between risk factor scores and symptom scores of PTSD criteria or dichotomous disorder scores (see Table 4.6). Deprivation was unrelated to PTSD or to the different criteria. When total PTSD dichotomous scores were examined, only peer problems were significantly related. For partial PTSD however, both peer problems and low self-esteem were related. Of the PTSD criteria – Avoidance (C) was the most highly related to the risk factors, relating to low self-esteem and peer problems but not to insecure attachment style. Insecure attachment style related to Re-experiencing (B) criteria. Hyper-vigilance (D) criteria related to low self-esteem and peer problems.

4. 4a Childhood experience and traumatic events

Childhood factors were first examined with bombing and PTSD events using cross-tabulations and chi square. Having a highly controlling father was related to being exposed to a PTSD event. Eighty percent (23/51) with a PTSD event had a highly controlling father compared to 51% (28/51) who had an event but not a controlling father (χ^2 6.5 $p < .01$). Mother care and control variables did not relate to any of the trauma variables.

Table 4.6

Correlations between risk factors and PTSD criteria

Risk factor (Pearsons r) N=108	A Criteria	B Criteria Re-experiencing	C Criteria Avoidance	D Criteria Hyper-vigilance	Partial PTSD	Total PTSD
Deprivation index	.15	.10	.07	.11	.06	.2
Low Self-esteem	.04	.18	.32***	.29**	.27*	.03
Insecure attachment score	.13	.29*	.2	.05	.06	.03
Peer Problems	.18*	.03	.37***	.31***	.21*	.29**
Mother low care	.02	.23*	.37***	.09	.15	.1
Mother high control	.1	.23*	.27**	.14	.13	.02
Mother high control/low care	.06	.05	.26**	.1	.1	.05
Father low care	.07	.23*	.28**	.34**	.29**	.05
Father high control	.24*	.23*	.25*	.26*	.1	.05
Father high control/low care	.25*	.04	.26*	.31**	.1	.03

*** p<.001 **p<.01 * p<.05

4.4.b Childhood experience and PTSD

Next, PTSD symptoms were examined in relation to childhood parental care scores using a correlation analysis. Table 4.6 shows that only father's low care related to partial PTSD with no childhood variables relating to full PTSD. However the different PTSD criteria did show associations with childhood experience of care and control. Only fathers high control or affectionless control was associated to A/trauma criteria, Re-experiencing (B) was associated with both mothers' and fathers' low care or high control but not to the combined affectionless-control variables. Avoidance (C) was associated with all the childhood variables, and Hyper-vigilance (D) was associated with all father care and control variables. Thus childhood experience is confirmed

as an associated risk factor for post-traumatic responses. When the analysis was repeated on dichotomised variables for partial PTSD, low self-esteem was the only factor significantly related, with nearly three times the increase in rate in those with PTSD (61% vs 24%, χ^2 9.5, 1p<.003).

There are two additional questions in the PTSD reaction index that assess associated features of PTSD; these are fear of re-occurrence and trauma-related guilt. The fear of re-occurrence measures young people's perception of the level of on-going threat that the trauma poses (Steinberg, Brymer, Decker, & Pynoos, 2004). Trauma related guilt occurs if the young person feels they should have done something to prevent the event from happening and is found to increase the severity of trauma reactions. None of the young people in this sample had associated feelings of guilt in relation to the trauma. However, the feeling that the event would reoccur was experienced by 28% (30/108) of the young people. The feeling of re-occurrence was examined in relation to risk factors and found to be related to low self-esteem: 66% (12/18) with reoccurrence fear had low self-esteem versus 33% (6/18) without reoccurrence fear (χ^2 14.4, p<.001).

4.4c Mediation and PTSD

Mediation was examined to test the attachment hypothesis linking childhood experience to disorder. Mediation analysis procedure was outlined in chapter 3 and is summarized in section 4.6c below. The test for mediation was relevant given the association between childhood risk (father's low care), concurrent risk (low self-esteem) and partial PTSD. However, when the logistic regression analysis was examined, father's low care was not significantly related to the dichotomized low self-esteem variable (OR=.44, Wald = .98, 1df, NS). Therefore full conditions for mediation are not met since all three factors need to be significantly related. Similarly when Avoidance (C criterion) was considered as the outcome variable, the relationship of low self-esteem to Avoidance was confirmed, but again the lack of positive relationship of father's affectionless control and low self-esteem meant no mediation effect was possible. Therefore there was no evidence of mediation between early

parental care and low self-esteem for traumatic-stress responses in this study. However, both childhood parenting factors and low self-esteem were shown to be important associated factors with PTSD.

4.5 Risk factors and SDQ disorder

SDQ disorders were examined in relation to demographic factors, using the borderline level cut-off for cross tabulations and chi-square statistic. For example girls and boys had similar rates of Any SDQ disorder (38% or 11/29 girls vs 41% or 25/79 boys, NS), Arabs and Jews had similar rates (36% or 17/37 versus 31% or 19/61 respectively, NS). There was no significant difference by religion: Jews had (31% or 19/61) rate of disorder with Druze (38% 9/24, NS), and the remainder 35% (8/23, NS). There was no difference by single versus two parent households (32% 9/28 versus 34% or 27/80 respectively, NS).

4.5a Risk factors and Any SDQ disorder

The risk factors were then examined in relation to Any SDQ disorder using dichotomised scores. There was a modest increase in disorder in those with high deprivation: 41% (22/54) versus 26% (14/54) (χ^2 2.6, 1 $p < .07$) and a significantly higher rate of disorder among those with peer problems (71% or 15/21 versus 24% or 21/87, χ^2 17.02, 1 $p < .0001$). There was an association with insecure attachment style 55% (11/20) with insecure attachment style versus 25% (9/36) with secure attachment style had Any disorder (χ^2 5.04, 1 $p < .04$). However, there was no relationship between self-esteem and disorder (22% or 4/18 with low self-esteem had disorder versus 36% or 32/90 without, NS).

The analysis was repeated using correlations of the full scores and full symptom scores of the different SDQ disorders (see Table 4.7). The deprivation index was associated with Emotional disorder and negatively related to Hyperactivity but not related to Any disorder, probably due to this reverse finding across disorder. Insecurity of attachment and self-esteem

were unrelated to any disorder. However, peer problems related to Any symptom scores, Emotional, Conduct and Hyperactive disorders.

Table 4.7

**Correlations between concurrent risk factors and symptoms of disorder
(Pearson's r)**

	SDQ Any	Emotional symptoms	Conduct symptoms	Hyperactivity symptoms
Deprivation index	.01	.22**	.09	-.16†
Self-esteem	.07	.02	.007	.14
Insecure Attachment score	.08	.09	.008	.08
Peer problems	.32**	.37***	.33***	.19*

†.09 * .05, **,.01 ***.001

Logistic regression analysis was undertaken to see whether peer group related to any SDQ disorder, when controls were applied for gender, ethnicity and group status. The same relationship was found with peer group and Any SDQ disorder (OR = 7.7, (1) p<.001, CI 2.7 to 22.8) but gender (OR=1.5, NS, CI .42 to 5.7), group membership (OR = .85, NS, CI.23 to 3.1), ethnicity (OR= 1.12, NS, CI .44 to 2.8) and Deprivation were unrelated (OR= 1.9, NS, CI .69 to 5.1).

The analysis was repeated using dichotomized scores for borderline/case level of the different SDQ disorders and is reported below by each disorder in turn.

4.5b Emotional Disorder

Emotional disorder showed the strongest relationship with deprivation with 20% (11/54) of those materially deprived having Emotional disorder compared to 7% (4/54) without (χ^2 3.8, 1 p<.05). This showed a dose-response effect with the higher the number of deprivation indicators the higher the rate of Emotional disorder (18%, 20% and 33% for 1, 2, and 3 indicators respectively). However the association with peer problems did not emerge in the dichotomous analysis as it had by correlation: 14% (3/21) versus 14% (12/87, NS). This appears to be because of the distribution of the peer

problems scores which bunched around the middle range and did not reach thresholds for the cut-offs. Low self-esteem showed no relationship to Emotional disorder (11% or 1/18 versus 14% or 13/90 NS) and insecure attachment style showed only a slight increase in those with disorder but not at a significant level (25% 5/20 versus 19% 7/36 without disorder, NS). When gender was examined the findings remained the same. Also when Emotional case level disorder was examined the same non-significant findings held. Thus apart from deprivation, no concurrent risk factors were determined for Emotional disorder in the dichotomized analysis.

4.5c Conduct Disorder

The relationship between concurrent risk factors and Conduct disorder at borderline level or above was then examined. There was an increased rate of deprivation in those with Conduct disorder: 39% (21/54) versus 22% (12/54) ($\chi^2 3.5, 1 p < .05$). Peer problems were almost three times as high in those with Conduct disorder (62% or 13/21 versus 23% or 20/87, $\chi^2 12.1, 1 p < .001$) and insecure attachment style (choice of B,C,D vignette) was twice as high in those with Conduct disorder (50% or 10/20 versus 25% or 9/36, $\chi^2 3.6, 1 p < .05$). However, low self-esteem was unrelated to Conduct disorder, and showed somewhat lower rates in those with disorder, than those without (22% 4/18 versus 32% or 29/90, NS).

4.5d Hyper-active disorder

The analysis was repeated for Hyper-active disorder. Only peer problems was highly related to disorder, with an eightfold increase in rate (24% or 5/21 versus 3% or 3/87, $\chi^2 10.2, 1 p < .0001$). Insecure attachment showed only a marginally higher rate in those with Hyper-active disorder (10% or 2/20 versus 7% or 2/36 without disorder, NS). None of those with Hyper-active disorder (0/18) had low self-esteem compared to 9% (8/90) without disorder (NS). There was no increase in the dichotomized deprivation index and Hyperactivity, (6% or 3/54 versus 9% or 5/54, NS) and the modest negative association found in the correlation analysis was still evident.

4.6 Childhood risk factors and SDQ disorder

The childhood care and control variables from both mother and father were then examined in relation to disorder. Table 4.8 shows that most of the variables were correlated, apart from mother's low care. When the combined mother's affectionless-control variable was examined, it related to Any disorder, Emotional and Conduct disorder but not Hyperactivity. Father's affectionless control however related to all the disorders.

Table 4.8

Correlations between childhood care and symptoms of disorder

(Pearson's r)	Emotional symptoms	Conduct symptoms	Hyperactivity symptoms	SDQ Any
Mother low care	.008	.08	.03	.13
Mother high control	.20*	.18†	.14	.23**
Mother affectionless control	.20*	.24**	.16	.27**
Father low care	.06	.24**	.33**	.26**
Father high control	.18†	.19†	.24**	.26**
Father affectionless control	.21 *	.30**	.31**	.34**

†.09 * .05, **,.01 ***.001

The analysis was then repeated using the dichotomous variables for different disorder outcomes. As described in Chapter 3, analysis was taken in two stages: first using continuous questionnaire scores to look for correlations between variables. This has the advantage of optimizing the full range of scores provided, and where symptoms are concerned can reflect more subtle associations for those who would fall short of disorder on a dichotomous scale. Its disadvantage is that the associations are two way and do not point to a model looking at outcome variables. The analysis is repeated using dichotomous variables for disorder outcomes using established cut-off scores. This enables a chi-square analysis to look for differences in those with and without risk status in relation to disorder.

The relationship of the childhood variables to Any SDQ disorder was then examined. The low care variable for mother showed a modest relationship (48% (10/21) versus 21% (23/79) χ^2 2.5, 1 p<.09) with low care from father having a stronger relationship (57% (16/28) versus 25% (21/84) χ^2 , 1 p<.01). All the father poor parenting variables related to Any disorder with 56% (9/16) of those with affectionless control from father having disorder compared with 28% (19/68) of the remainder (χ^2 4.6, 1, p<.03).

When Emotional disorder was examined, no childhood variable was significantly related although there were increases in rate for the father's poor parenting. There was no raised risk at all from mother's poor parenting. This is inconsistent with the literature on emotional disorder described in chapter 2, but low rates of emotional disorder in this sample may be the reason.

The relationship between childhood experience and Conduct disorder was then examined. Only mother's low care was significantly related to disorder with 48% (10/21) of those with low maternal care having Conduct disorder versus 25% (20/79) with high care (χ^2 3.9, 1 p<.04). Father's low care provided a similar trend (43% or 9/21 versus 25% 16/65) but this fell short of statistical significance (χ^2 2.3, 1, NS). There was no significant relationship with parental control variables. There was some increased rate in those with affectionless control from mother or father, but again short of statistical significance (Mother 40% (6/15) versus 28% χ^2 .840,1, NS; Father 38% (6/16) versus 28% (19/68) χ^2 .566, 1, NS). This analysis is therefore somewhat different to previous research which has tended to highlight high control and father's parenting in Conduct disorder. However, showing an association with low care rather than high control is less open to arguments of reverse causality – i.e that the parenting is due to the child's disruptive behaviour- rather than vice versa- which could be argued for high parental control, but less so for low care.

Finally the same childhood factors were examined in relation to Hyper-active disorder. Mother's high control was highly related to an increased rate of Hyperactive disorder (14% or 6/43 versus 1% 1/57, χ^2 5.6, 1 p<.01). Also all father's poor parenting scales were related to Hyperactivity, with father's low

care showing an 8-fold increase in risk (24% or 5/21 versus 3% or 2/63, χ^2 8.7 (1) $p < .01$) and father's affectionless control a similar rate (24% or 4/16 versus 4% or 3/68, χ^2 7.1 (1) $p < .02$). There was a trend for father's high control to be related to Hyperactivity (14% 4/29 versus 5% or 3/55) but this was not significant. Thus parental control was highly related to Hyperactivity in the young people. Again, it needs to be considered that parental controlling behavior may be influenced by Hyperactivity at an early age rather than vice versa. However, father's low care is less likely to be a direct consequence of child's disruptive behavior influencing parenting.

4.6a Ethnicity, poor parenting and disorder

Given the higher rate of parenting problems in the Arab youth, the association of poor parenting and disorder was re-examined by ethnicity. There was, in fact, little effect of ethnicity on disorder by childhood risk factors. Only father's affectionless control showed modest association with Hyperactivity for Arab youth: 23% (3/13) with affectionless control versus 5% (2/28) without (χ^2 3.5, 1 $p < .09$). Rates for Jewish youth were similar but the difference did not reach any level of significance: (33% (1/3) vs 4% (2/42) NS). No differences were found by ethnicity for poor parenting and Conduct disorder or Emotional disorder.

4.6b Modelling disorder

Modeling of disorder was undertaken using binary logistic regression, to predict the log odds of a dependent or outcome variable (in this case disorder), and provide the most parsimonious model when all relevant independent factors were examined together. The models examined included childhood affectionless control by mother and by father, in addition to the strongest concurrent risk factor - peer problems - to predict the different disorders. The logistic regressions were repeated for each disorder (i.e. Any SDQ disorder, Conduct disorder and Hyper-active disorder. Emotional disorder was excluded since it has no significant association with peer problems or affectionless control). The logistic regressions are shown in table 4.9 (A, B, C). Results show that peer problems significantly and consistently predicted each type of disorder. Father or mother's affectionless control did not contribute to Any SDQ disorder or to Conduct disorder. For Hyperactivity,

both father's affectionless control and peer problems contributed significantly. (Here, mother's affectionless control had zero input, the result of a slight inverse relationship to hyperactive disorder, an overlap with father's affectionless control, and due to small numbers with disorder. When the regression was repeated excluding mother's affectionless control, peer problems and father's affectionless control both remained as predictors). In all the logistic regressions presented there was satisfactory goodness of fit percentages (75.6% for A and B) with the Hyperactivity model reaching 95.1%. Variance explained ranged from 13% (Conduct disorder) to 29% (Any Disorder).

Table 4.9

Risk factors and SDQ disorder – binary logistic regression analysis

(A) Any SDQ disorder

	Odds-ratio	Wald	df	P	95% CI Lower	95% CI Upper
Peer problems	9.222	11.170	1	.001	2.5	33.69
Mother affectionless control	.157	3.554	1	.059	.7	17.49
Father affectionless control	2.5	4.726	1	.030	0.3	1.53

Peer problems and father affectionless control best predictors. (Mother affectionless control predicts just over 5% level). 75.6% goodness fit

B) Conduct disorder

	Odds-ratio	Wald	df	P	95% CI Lower	95% CI Upper
Peer problems	7.187	9.993	1	.002	2.1	24.4
Father affectionless control	.738	.140	1	NS	.15	3.6
Mother affectionless control	.882	.024	1	NS	.17	4.3

Peer problems alone provide the best model for Conduct disorder with 75.6% goodness of fit.

(C) Hyperactive disorder

	Odds-ratio	Wald	df	P	95% CI Lower	95% CI Upper
Peer problem	20.6	6.4	1	.01	1.9	213.8
Father affectionless control	32.8	7.4	1	.006	2.6	401.8
Mother affectionless control	0	0	1	NS	0	0

Both peer problems and father's affectionless control provide the best model for Hyperactivity with 95.1% goodness of fit.

4.6c Testing a Mediation model

An earlier discussion describes how mediation analysis is best undertaken in prospective designs with the outcome examined at a later measurement point (Gelfand & Tenhave, 2009). This ensures the correct time order of variables when examining potential causal linkages. However, as argued earlier, mediation was tested in the first phase of this study, although cross-sectional, in order to examine whether Attachment hypotheses were supported and to further detail the relationship between variables. However, the cross-sectional nature of data collection at this point means that findings should be viewed with caution.

The conditions for mediation are possible in the analysis thus far, given the association of childhood experience of father's affectionless control (the independent variable), peer problems (the potential mediator) and Any SDQ disorder (the outcome variable). Mediation serves to test the causal hypothesis that having peer problems is a mediating or linking experience between earlier childhood experience and later disorder. The test for mediation follows the usual threefold logistic regression procedure (Baron & Kenny, 1986), to produce a triangular path diagram. This path model "assumes a three-variable system such that there are two causal paths feeding into the outcome variable: the direct impact of the independent variable (Path c) and the impact of the mediator (Path b). There is also a path from the independent variable to the mediator (Path a)" (page 1176) (Baron & Kenny, 1986)

Thus the mediation analysis involves testing the independent and potential mediator variable against the outcome variable, and then both of the former together in relation to the outcome variable. At this final regression step the independent variable is expected to drop out of the model (i.e. to be non-significant) with the mediator remaining significant. Baron & Kenny note that in most psychological experiments, path c (the independent variable) rarely goes to zero however “a significant reduction demonstrates that a given mediator is indeed potent” (p 1176) (Baron & Kenny, 1986)

Table 4.10 shows the three steps undertaken in logistic regression and Figure 4.16 summarises triangular path diagram. A partial mediating effect is shown for problem peer relationships (path b). This is indicated by the non-significant relationship in Step 3 ‘c’ (father’s affectionless control and disorder) once poor peer relationships is taken into account. Since this did not reduce to zero (c=1.7), only partial mediation can be claimed.

Table 4.10

**Mediation steps using binary logistic regression
Peer problems, father affectionless control and Any SDQ disorder**

Step 1 (path ‘b’)

Outcome Any disorder

	Odds ratio	Wald	df	P	95% CI for OR	
					Upper	Lower
Peer problems	7.85	14.35	1	.000	2.70	22.82

Step 2 (path ‘a’)

Outcome peer problems

	Odds-ratio	Wald	df	P	95% CI for OR	
					Upper	Lower
Father’s affectionless control	6.66	9.92	1	.002	2.04	21.68

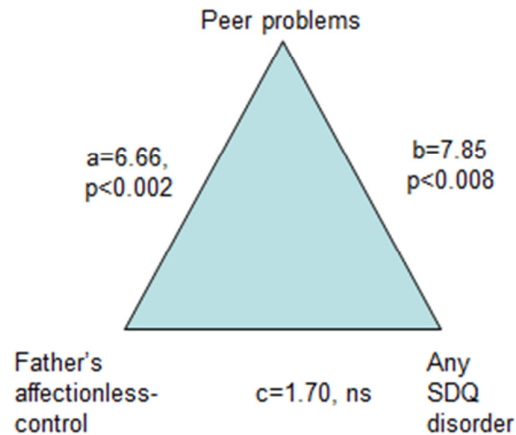
Step 3 (path ‘c’)

Outcome Any disorder

	Odds-ratio	Wald	df	P	95% CI for OR	
					Upper	Lower
Father’s affectionless control	1.70	.64	1	NS	.46	6.23
Peer problems	7.10	10.59	1	.001	2.18	23.14

Figure 4.2 Summary mediation analysis

Summary mediation analysis



The first part of the analysis using phase 1 measures has shown important associations between risk factors and PTSD and SDQ disorder, highlighting parenting in childhood, peer problems and disorder in the expected directions. The next part will examine issues of trauma and life events.

4.7 Trauma events

Just over half the young people (n= 59) had experienced a traumatic event in the year (see table 4.11). There was no difference in rate between the cycling and comparison group. These trauma events included being in an accident, being hit at home, beaten in the community, seeing a dead body, seeing someone in town being shot, or beaten, sexual abuse, or hearing about a violent death or injury. The most common trauma event was hearing about a violent death of a loved one (38%). In addition to the standard PTSD trauma events, bombing experiencing was also examined with 40% having exposure to bombing experience. Two-thirds of the young people (67%) had experienced either a trauma event or a bombing event. Nearly a quarter of the young people had experienced 3 or more trauma or bombing events. There were no differences between the cycling and comparison groups. The following analysis examines PTSD as a response to trauma and bombing events.

Table 4.10**Prevalence of Trauma and Bombing Events**

Prevalence of Events n=108	Total group	Cycling Group (n=60)	Comparison Group (n=48)	χ^2 (1)	P
Exposure to PTSD trauma	55% (59)	58% (35)	50% (24)	.60	NS
Exposure to bombing	40% (43)	34% (20)	48% (23)	2.2	NS
Exposure to either PTSD trauma or bombing	67% (72)	63% (38)	71% (34)	.67	NS
Exposure to 3 or more total events	23% (25)	27% (16)	19% (9)	.93	NS

4.7a Trauma events, risk factors and disorder

As part of the Ecological approach, the presence of bombing events or trauma events was first examined in relation to demographic risk factors, and then to SDQ disorder before looking at PTSD. Dichotomous variables were created of at least one bombing event, at least one trauma event and three or more of either event. These were cross-tabulated with the risk variables and shown on table 4.11.

It can be seen that there was a trend for more girls to have experienced any event (bombing or trauma) with as many as 70% reporting at least one compared with 62% of boys ($p < .07$). Arabs were significantly more likely to experience a trauma event with as many as 77% reporting one compared to 38% of Jewish young people ($p < .0001$). This did not however hold for bombing events with little difference between the groups (44% of Arabs and 38% of Jews). The group difference remained for any one event (bombing or trauma) and for 3 or more events with a fourfold increase in Arab youth. Bombing events are more common in those without material deprivation with half of those not suffering deprivation having experienced an event compared with 28% of those deprived ($p < .007$). Whilst there was no relationship of deprivation to trauma event, there was a trend for deprivation to relate to experience of either bombing or trauma ($p < .07$) and three or more events ($p < .08$).

Table 4.11

Risk factors and trauma and bombing events

Risk variable	Bombing event	Trauma event	Any event or bombing	3 or more events
Male	39% (30/78)	52% (41/79)	62% (49/79)	25% (20/79)
Female	45% (13/29)	62% (18/29)	79% (23/29)	17% (5/29)
	$\chi^2 .35, 1, NS$	$\chi^2 .88, 1, NS$	$\chi^2 2.85, 1, p < .07$	$\chi^2 .77, 1, NS$
Jewish	38% (23/61)	38% (23/61)	54% (33/61)	10% (6/61)
Arab	44% (20/46)	77% (36/47)	83% (39/47)	40% (19/47)
	$\chi^2 .36, 1, NS$	$\chi^2 16.1, 1, p < .0001$	$\chi^2 9.96, 1, p < .001$	$\chi^2 13.96, 1, p < .0001$
Deprivation	28% (15/54)	54% (29/54)	59% (32/54)	17% (9/54)
No deprivation	53% (28/53)	56% (30/54)	74% (40/54)	30% (16/54)
	$\chi^2 6.98, 1, p < .007$	$\chi^2 .03, 1, NS$	$\chi^2 2.66, 1, p < .07$	$\chi^2 2.55, 1, p < .08$
Peer problems	29% (6/21)	76% (16/21)	81% (17/21)	24% (5/21)
None	43 (37/86)	49% (43/87)	63% (55/87)	23% (20/87)
	$\chi^2 1.46, 1, NS$	$\chi^2 4.85, 1, p < .02$	$\chi^2 2.39, 1, p < .09$	$\chi^2 .00, 1, NS$
Low self-esteem	35% (6/17)	67% (12/18)	72% (13/18)	39% (7/18)
None	41% (37/90)	52% (47/90)	66% (59/90)	20% (18/90)
	$\chi^2 .20, 1, NS$	$\chi^2 1.26, 1, NS$	$\chi^2 .30, 1, NS$	$\chi^2 3.00, 1, p < .08$
Insecure attachment	40% (8/20)	55% (11/20)	65% (13/20)	35% (7/20)
Secure	36% (13/36)	58% (21/36)	67% (24/36)	17% (6/36)
	$\chi^2 .08, 1, NS$	$\chi^2 .05, 1, NS$	$\chi^2 .01, 1, NS$	$\chi^2 2.42, 1, NS$

Peer problems were significantly related to trauma events, with 76% of those with peer problems experiencing a trauma event compared with 49% with no peer problems ($p < .02$). There was however no relationship of peer problems to bombing experience, and only a weak relationship with either type of event or 3 or more events (see table 4.11). There was a trend for those with low self-esteem to have 3 or more events ($p < .08$) but no relationship to bombing event and only slight increases with trauma event. There was no association of insecure attachment and trauma or bombing events. Thus it can be seen

that such external events are associated with social demographic factors (gender and ethnicity) consistent with Ecological approach as well as psychological personal risk factors such as low self-esteem and peer problems. However, these mostly related to trauma events, rather than bombing events.

Events were then examined in relation to psychological disorder. No relationships were found between Emotional disorder or Conduct disorder and experience of trauma or bombing events. However, those with Hyperactive disorder experienced more bombing events (75% versus 37% without Hyperactive disorder ($p < .04$) as well as having 3 or more events (63% vs 20% respectively, $p < .01$). There was no relationship with borderline/case level disorder. However when case level disorder was examined there was a trend for any event or bombing to be present among cases (80% versus 62% of non-cases, $p < .08$) and for cases to have 3 or more events (36% vs 19% in non-cases, $p < .07$).

Trauma events were associated with being Arab, being a girl, having peer problems but not with SDQ disorders. Bombing events was not associated with risk factors but was associated with Hyperactive disorder.

4.8 Resilience factors

The analysis will now examine positive factors and resilience. Resilience factors are defined as those positive factors that decrease disorder outcomes despite experience of adversity. This section will examine the relationship between positive experiences as potential resilience factors in resulting in lower rates of disorder for those in adversity. Factors selected were good social support, secure attachment style and pro-social behaviour (from the SDQ). Having a very low symptom count on the SDQ was also taken as a marker of wellbeing. This section aims to respond to research question 2 below.

RQ2: Do positive factors such as support, pro-social behaviour and having a secure style of attachment relate to lower rates of disorder? Can this serve to protect against poor parental care in childhood?

4.8a Prevalence of positive factors

Table 4.12 examines the prevalence of positive factors in the total sample and in the two groups. In terms of support, most of the young people reported having some sort of support figure either from an adult or peer (83.3% - see Table 4.12, column 2). Half reported the presence of an adult role model, 70% could go to an adult with problems and 68% to a peer. A score of 2+ support figures was therefore used as a slighter higher threshold of support for analysis, with 50% of sample having support at this level. Over half the young people (59%) were rated as secure on attachment style.

The pro-social scale in the SDQ examined positive interactions with others including: 'I try to be nice to other people'; 'I usually share with others'; 'I am helpful if someone is hurt, upset or feeling unwell'; 'I am kind to younger children'; 'I often volunteer to help others'. Such pro-social behaviour was very high in both the cycling and comparison groups (88%). These rates are similar to UK (Barbara Maughan, Collishaw, Meltzer, & Goodman, 2008) (Comparison of means test $P < .5$ NS $t = 0.6016$, $df = 3036$, standard error of difference = 0.166). Because rates were so high using the published threshold, a higher threshold cut-off was used for the remaining analysis to reflect the top 75% percentile (score of 9 or more). This applied to 50% of the sample and represents particularly high pro-social behaviour.

Table 4.12 shows the prevalence of positive factors in the study groups. It can be seen that there were no differences between the groups on any of the positive variables, although the cycling group were more likely to have an adult role model. This may have been due to the fact the cycling intervention had already started at Phase 1 measures and reflect relationships with coaches.

Table 4.12

Prevalence of Positive Factors

Characteristics*	Total sample	Cycling Group	Comparison Group	χ^2 (1)	P
Go to Adult for help	70.3% (45/64)	67.5% (27/40)	75% (18/24)	.6,1	NS
Have adult role models	53.2% (33/62)	60.5% (23/38)	41.7%(10/24)	3.8,1	.06
Go to peer for help	67.7% (42/62)	65.8% (25/38)	70.8% 17/24)	.4,1	NS
Support from any source	83.3% (50/60)	84% (31/37)	83% (19/23)	1.5, 1	NS
Support index 2 + support figures	50% (52/105)	55% (32/105)	43% (20/105)	1.6,1	NS
Attachment Style Secure (6 or 7)	59% (33/56)	56% (18/32)	62.5% (15/24)	1.9,1	NS
High Pro Social Skills (score 9, top percentile)	50% 54/105	45% 27/105	56% 27/105	1.3,1	NS

* Totals vary due to some missing values on positive scales.

4.8b Inter-relationship of Positive factors

An inter-correlation matrix of positive factors was undertaken (see table 4.13). It can be seen that pro-social behaviour was related to ‘going to adults with problems’, and that having an adult role model related to ‘going to adults with problems’ and ‘going to teenagers with problems’. Secure attachment style (score of 6 or 7 on the Likert scale) was unrelated to any of the variables.

Table 4.13

Inter-correlation of positive factors

	Pro Social score	Secure score	Adults for problems	Adult role model	Teenagers for problems	Two closest
Pro Social	1					
Secure attachment score	.21	1				
Adult support for problems	.19*	-.06	1			
Adult role model	.11	.17	.62**	1		
Teenager support for problems	.12	.06	.60**	.50**	1	
Two closest figures	-.05	-.06	.18	-.24	.11	1

* Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

Secure attachment style was re-examined using the dichotomised scale (choice of A, secure vignette) and cross tabulations. (It should be noted that attachment style variables were only available for half the sample). Having a

secure attachment style proved significantly related to having two or more support figures: 64% with secure style had 2+ supports vs. 37% without (χ^2 4.9, 1, $p < .001$). Pro-social behaviour also proved to be related to Secure attachment style with 57% (17/30) with high pro-social behaviour reporting Secure style versus 32% (9/28) of those with low pro-social scores (χ^2 3.52, $p < .05$).

Positive factors were then examined in relation to SDQ disorder to look for negative associations, but no relationships were found. For example pro-social behaviour was unrelated to SDQ disorder (33% with pro-social had disorder and 33% without, ns) and although support was reduced in those with disorder (36% with support had disorder vs 60% without, NS) this did not reach statistical significant levels

4.8c Moderation effects

A moderator is defined as “*a variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable*” (Pag1174)(Baron & Kenny, 1986). It can be characterised as a positive factor that buffers or weakens the relationship between an independent risk factor and negative outcome. This can be a treatment factor or a naturally occurring positive experience or attribute that serves to lessen the impact of negative independent variables. Moderator variables are used “*when there is a unexpectedly weak or inconsistent relation between a predictor and criterion variable (e.g. a relation holds in one setting but not in another, or for one subpopulation but not for another)*” (page 1178) (Baron & Kenny, 1986). They are indicated by interactions between key independent and moderator variables in relation to outcome variables.

In this analysis, there was no association between pro-social behaviour and lower disorder, or support and lower disorder as potential moderators with experiences such as childhood poor care or control. Therefore, the moderation criteria were not met. An alternative approach was therefore made, using an estimate of wellbeing outcome.

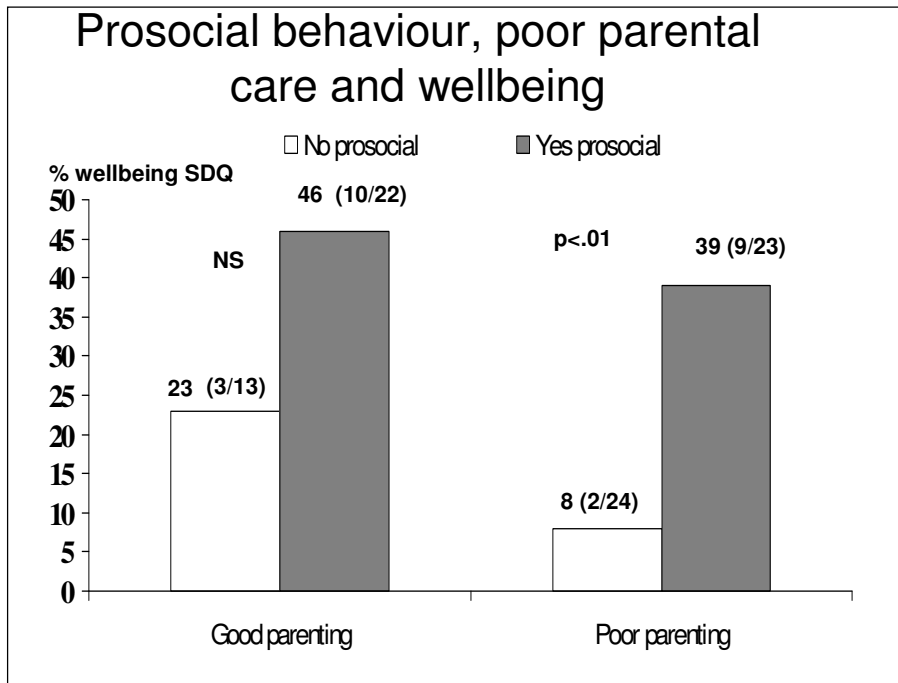
4.8d Wellbeing outcome

Low scores of the SDQ to reflect wellbeing, (score of 0-5) was utilised as described earlier with 30% of the sample having wellbeing thus defined. It is important to note that this is not the same as absence of disorder with previous cut-offs used, but rather a more extreme lack of symptomatology. Wellbeing was related to pro-social behaviour with 41% (22/54) of those with high pro-social behaviour having wellbeing, and 19% (10/54) of those without having wellbeing (χ^2 6.39, $p < .01$). However, no other relationships were found: support (55% vs. 41% respectively, NS) or having 2+ support (54% vs. 38%, respectively NS) or secure attachment style (31% vs 32% respectively, NS).

A further analysis was undertaken to test conditions under which pro-social behavior was activated in relation to SDQ wellbeing outcome. This included testing for the influence of pro-social behavior in the presence of any poor parenting variable from mother or father. Here it was shown that an effect was observed for pro-social behavior relating to higher wellbeing when poor parenting was present ($\chi^2 = 6.21, 1, p < .01$) (see figure 4.3, right hand columns). Therefore, there was some evidence that pro-social behavior does have greater impact under adverse conditions, which specifies its role as a positive factor. Of course this does not explain how pro-social behavior originates in families with poor parenting. It may be that there is a closer relationship with one of the parents which activates pro-social behavior when parenting is poor from the other, or such a close relationship with another adult or family member. Pro-social behavior may even be increased in families with poor parental care where caring for younger siblings or indeed caring for parents themselves are involved. However, in this analysis such pro-social behavior was associated with wellbeing in terms of lower rates of symptoms.

Figure 4.3

The effect of pro-social behavior on wellbeing in those with poor parental care in childhood



4.9 Summary and discussion

The chapter examined a range of demographic and risk factors in the sample studied and in relation to disorder in the first phase of the study. The objectives of the analysis were to: describe the sample; determine prevalence rates of disorder for entire sample and by group; analyse which risk factors related to disorder for the entire sample and by group; to test for mediation of childhood risk factors by concurrent risk factors and to analyse positive factors and wellbeing to see if moderation or 'resilience' occurs. Findings are summarised below.

4.9a Demographics

The sample proved to represent both Jewish and Arab communities, with 50% scored on an index of material deprivation involving father's unemployment and inadequate housing. There was no difference in rates of Jews or Arabs in the two groups and no difference in rates of deprivation between Jews/Arabs

in this sample. It should be noted however that the Arab groups mainly represented Druze and Christian with few mainstream Moslem groups reflected which may not be representative of the Arab Israeli population. A quarter of the children were from single parent families representing both mother and father absence. When cycling group and comparison were examined, there was uneven distribution by gender (more boys in cycling and girls in comparison) but no differences by nationality, age or fathers' in work. However, the cycling group was more likely to be deprived; they had fewer fathers at home, more likely to live in smaller homes, share a bedroom and had fewer working mothers. Given the similarity of the two groups it was appropriate to combine them for the analysis for phase 1 and the comparison group was deemed suitable for phase 2.

4.9b Risk factors

In terms of risk factors, 20% of the entire sample had low self-esteem 19% peer problems and 41% had insecure attachment style. These risk factors were not differently distributed in the cycling and comparison group. Around a third of the young people had problems in early parenting with 15% having mothers with 'affectionless control' and 19% father's affectionless control. Arab young people were more likely to have fathers who were affectionless controlling. The cycling group was more likely than the comparison to have poor care and control from mothers and fathers which corresponds with their involvement with social services. Whilst this does not interfere with the analysis of concurrent risks at follow-up, it needs to be considered that the cycling group may have more chronic difficulties and more impaired early development linked to problem parenting which may make their current risk factors less situational, more intractable and less amenable to change.

4.9c SDQ disorder

Twenty three percent of the entire sample had clinical level disorder and 33% had symptoms of Any disorder which was used for the bulk of the analysis. The most common type of disorder was Conduct disorder (31%) with Emotional disorder only half as common (14%) with a low rate of Hyperactive disorder at 7%. These rates were substantially higher than UK and Israeli published rates. There was no difference between the groups for borderline

level disorder. In terms of gender, girls were more likely to have case level Emotional disorder and boys case level Conduct disorder consistent with previous research findings. Whilst there are too few girls in the sample to be able to undertake extensive controls for gender, when gender was examined in models it did not appear to contribute.

Borderline level SDQ disorders were thus unrelated to gender, religion, or nationality or belonging to a single parent household. The risk factors most highly associated with disorder at borderline level, were peer problems, insecure attachment and parenting variables. Low self-esteem proved unrelated to any of the disorders in this analysis. There was some differentiation of risk by type of disorder with deprivation the only factor significantly related to Emotional disorder, but peer problems being the best correlate of Conduct and Hyperactive disorder. In logistic regression, peer problems and fathers affectionless control related to having Any SDQ disorder. In mediation modelling, peer problems were shown to have a partial mediating effect on father's affectionless control and Any SDQ disorder.

4.9d Trauma events and PTSD

As many as two-thirds of the sample or more reported either bombing experience or a traumatic event. Whilst rates were similar in the two groups, exposure to bombing was somewhat higher in the comparison group. Risk factors related to experiencing a traumatic event included being Arab, not being deprived and having peer problems. Partial PTSD was experienced by a third of the group but only 6% had likely clinical level or full PTSD disorder. These rates are similar, but lower than Israeli rates reported elsewhere, but substantially higher than UK rates. Correlation analysis showed that peer problems, low self-esteem and having low care from father were related to PTSD criteria. However, this only held at correlation levels and for dichotomous variables only low self-esteem was significantly related to PTSD showing a nearly threefold higher rate for those with partial PTSD. Mediation criteria were not met for childhood variables, low self-esteem and PTSD. In chi square analysis, Any SDQ and Conduct disorder showed a trend in

relation to both full PTSD and to Avoidance (C criterion). Emotional and Hyperactive disorder were not associated with PTSD.

4.9e Positive factors

Most of the young people in the sample had social support (83%) and 50% had 2 or more support persons in their lives with half having high Pro-social behaviour. Both support and pro-social behaviour were inter-correlated, with cross-tabulations showing significant relationships of pro-social behaviour to support and to secure attachment style. These factors did not have a negative relationship with disorder. However when a variable of wellbeing was defined in terms of very low SDQ symptoms, 30% of the youth had such wellbeing and associations were found with pro-social behaviour. Whilst there was no evidence of moderation to show resilience using logistic regression models, there was evidence that pro-social behaviour in the context of poor early parenting contributed significantly to wellbeing.

4.9f Conclusion

The findings showed expected associations of risk to disorder following both Ecological and Attachment approaches. On the Ecological front, material deprivation was correlated with low self-esteem and insecure attachment style as well as Any disorder, Emotional disorder and negatively to Hyperactive disorder. However it was unrelated to childhood poor parenting or to PTSD. There was a high level of trauma and bombing events in the study group, related to raised levels of sub-clinical PTSD and reflected issues associated with the political conflict. Expected associations were found between poor parental care and both SDQ and PTSD disorder, as well as peer problem, consistent with attachment theory hypotheses. Poor parenting mediated the relationship between peer problems and Any SDQ disorder, again as expected from this approach. However, insecure attachment style was inconsistently related to disorder, although relationships emerged with Conduct disorder and to Re-experiencing PTSD criterion (B). Support and pro-social behavior related to wellbeing as well as to Secure attachment style which also reflects Attachment approaches to healthy development.

There are a few things to note in the analysis which will be discussed further in the concluding chapter. One is the occasional higher number of associations using correlations than dichotomized variables in the analysis, which raises an issue of thresholds and the type of data provided in self-report Likert scales. This should be considered in relation to the fact that sub-clinical levels of disorder reflecting a public health rather than clinical concern, which may also influence the thresholds for risk-disorder relationships. The other issue is the lack of significant association of psychological risk factors and Emotional disorder in this analysis. While this is surprising given the expected association of low self-esteem and insecure attachment style in other studies it may reflect the low rate of emotional disorder in this sample. Similarly, the lack of relationship of self-esteem to risk and SDQ disorder may reflect low rates of Emotional disorder, although the expected relationship with PTSD did emerge. These issues will be discussed in the concluding chapter.

Chapter 5 will examine the follow-up quantitative data to look for change over time in risk and disorder in relation to the cycling intervention.

Chapter 5: Findings from Questionnaire Analysis in Phase 2

5.1 Introduction

This chapter presents the findings of the impact of the cycling intervention by analyzing changes in questionnaire response between Phase 1 and Phase 2, a 9-month follow-up. It serves to answer the third research question:

RQ3: Does a cycling intervention reduce risk factors (such as low self-esteem) and increase resilience factors (such as support) and reduce symptom levels?

It was hypothesised that involvement in sports activities, especially those that are structured and coach facilitated, would reduce risks around low self-esteem and peer relating; provide increased positive experiences of pro-social behaviour and support and reduce psychological symptoms. This will be examined by type of factor in each group and then between groups.

As discussed in chapter 3, the follow up numbers for the questionnaire suffered from a high attrition rate which in turn reduced statistical power due to small numbers. There were 34 in the cycling group at follow-up and 28 in the comparison group. However, there were also some missing values leading to smaller numbers for some analyses. As discussed earlier there is an increased likelihood of Type 2 statistical errors occurring where differences in rates are not reflected in statistically significant results i.e. not rejecting the null hypothesis when it is false. Therefore statistical significance levels to $p < .10$ are reported. The low numbers mean the follow-up questionnaire findings should be taken as exploratory and interpreted with caution.

Statistical analysis comparing variables and symptoms at Phase 1 and Phase 2 involved using Pearson's correlations for full item scores, and chi-square on dichotomized variables.

5.2 Demographics at follow-up

Of the 62 young people followed up, similarly high rates of boys (71%) were

included. This reflected nearly all of the cyclists (94%) but just under half of the comparison group (43%, $p < .0001$). In terms of ethnicity the group at follow-up included 45% Jewish and 55% Arab youth, but with more Arabs in the cycling group (62% vs 46%, NS). In terms of religion, in addition to the 45% Jewish, 31% were Druze and 18% Christian. In terms of the groups all the Druze were in the cycling group (56%) and all the Christians in the comparison group at follow up (38%) ($p < .0001$). As at first contact, deprivation rates were higher in the cycling group with 71% versus 32% of comparison youth. The mismatch of gender in particular at follow-up needs to be considered in relation to the findings and limitations of the study.

5.2a Cycling questionnaire response

The young people in the cycling group at follow-up completed additional questionnaire items on their attendance at the cycling sessions. By the 9 month follow-up, 75% responded that they had been in cycling for a year with 17% having been in for less than a year and 8% more than a year. The number of sessions attended ranged from 20 to 80, with 43% having 80 sessions and 37% having over 40 sessions with 19% having fewer. This showed that nearly all had substantial experience of the cycling over a sustained period.

5.3 Changes in risk factors

5.3a The cycling group changes in risk factors

Peer problems and self-esteem were retested at follow-up in the cycling group. First, given high attrition rates, a check was made that the subgroup followed up were similar to the full group at Phase 1 in terms of frequency of risk (see Table 5.1). Rates of these two risk factors in the subgroup followed-up were similar to the rate for the full group at Phase 1, although slightly elevated for peer problems (Table 5.1 column 1 and 2). It can be seen that there was a significant reduction in the rate of low self-esteem from 18% at Phase 1 to 9% at follow-up ($p < .05$).

For peer problems, there was a smaller level of change between the two time points using dichotomized variables (26% vs 20%, NS), with the latter proportion reflecting the rate for the full group at Phase 1. There was a small reduction in peer problems (26% to 20%) but this did not reach statistical significant levels.

Table 5.1

Changes in risk factors Phase 1 and Phase 2 – cycling group

	Phase 1 total group N= 60	Phase 1 (those with f-u) N=34	Phase 2 N=34	χ^2 (1)	P
Low self-esteem <15	18% (19)	18% (6)	9% (3)	4.37,	.05
Peer problems	19% (21)	26% (9)	20% (7)	2.73	NS

Thus there was evidence of positive change in the cycling group in the diminution of risk factors in relation to self-esteem only. It was then necessary to see if the comparison group had changed since Phase 1, before comparing the two groups.

5.3b Comparison group changes in risk factors

When low self-esteem at Phase 1 in the subgroup followed up was examined, it was found to be at a lower rate (4% or 1/28 vs 13% 6/48) than for the total group suggesting that those followed up were somewhat lower risk. However rates of peer problems were similar at 19% (9/48 for total) and 21% (6/28) for the subgroup at Phase 1. When changes in risk factors were examined for the comparison group, there was no change in self-esteem with rates of (4% or 1/28) at both Phase 1 and Phase 2 (NS). When peer problems were examined, these had reduced at Phase 2 from 21% (6/28) to 7% (2/28) but the difference was not statistically significant ($\chi^2=1,1$, NS).

5.3c The cycling versus comparison group

When risk factors were compared between the groups at Phase 2, there were no significant differences between the groups (see table 5.2) Rates of peer problems were in fact higher in the cycling group (20% vs 7%) contrary to expectation, although not a statistically significant difference. Thus, despite

reductions of low self-esteem in the cycling group, it was not reflected in the cross-group comparison.

Table 5.2

Comparing risks- cycling and comparison groups – Phase 2

	Cycling n= 34	Comparison n= 28	χ^2 (1)	P
Low self-esteem	8% (3)	4% (1)	1.12	NS
Peer problems	20% (7)	7% (2)	2.28	NS

5.4 Change in positive factors

5.4a Changes in positive factors in the Cycling group

Table 5.3 examines changes in positive factors in the cycling group. The subgroup followed up had lower rates of positive factors at Phase 1 than was typical of the group as a whole suggesting differences in those who were not available for follow-up (see table 5.3, column 2 & 3). Many of the indicators of support showed an increase at Phase 2. However, the only one to reach statistical significance was 'having a role model' ($p < .02$.) But it should be noted that the rate at follow-up was the same as that for the larger cycling group at Phase 1 so the finding needs to be interpreted cautiously. The role models included coaches but also mothers, fathers, rabbis, teachers and family.

There was also a modest increase in any level of support ($p < .10$). The type of support included cycling coaches, but also included parents, extended family, friends, religious leaders and teachers. Pro Social skills from the SDQ questionnaire examined positive and caring interactions with others. This did not change at follow-up.

Table 5. 3

Changes in positive factors- Cycling group

	Phase 1 total n=60	Phase 1 (those with f-u)	Phase 2	χ^2 (1)	P
Go to adults for help	68% (27)	44% (12/27)	63% (17/27)	0.13	NS
Have adult role models	61% (23)	48% (14/27)	62% (18/27)	6.43	.02
Go to peer for help	66% (25)	48% (14/27)	62% (18/27)	3.17	NS
Support from any source	58% (35)	52% (14/27)	88% (24/27)	3.66	.09
Support 2+ sources	52% (31)	44% (12/27)	37% (10/27)	1.59	NS
High Pro-social Skills	45% (27)	53% (18/34)	53% (18/34)	0.13	NS

Note – 7 missing values on the support and role model sections

5.4b Changes in positive factors in the comparison group

Changes in positive factors in the comparison group were also examined and whilst there was a trend to increase in support in the follow-up, no significant differences were found (see table 5.4). In fact all the young people had support in Phase 2, which is rather closer to the total group at Phase 1 (92%). Having 2 or more support figures rose from 50% to 67% (NS) (see table 5.4). There was a high increase in being able to go to adults for help (43% to 75%) but this latter was closer to the total group rate at Phase 1 of 63%. Prosocial behaviour dropped slightly from 57% to 46% in the comparison group (NS).

Table 5.4

Changes in positive factors – comparison group

(n=28 seen at both Phases)

	Phase 1 Comparison N=48	Total	Phase 1 (those with f-u) N=28	Phase 2 N=28	χ^2 (1)	P
Go to adults for help	63% (30)		43% (12)	75% (21)	0.76	NS
Have adult role models	21% (10)		21% (6)	100% (21)	2.54	NS
Go to peer for help	35% (17)		43% (12)	93% (26)	0	NS
Support from any source	92% (44)		89% (25)	100% (28)	0	NS
Support 2+	36% (19)		50% (14)	67% (19)	1.47	NS
High Pro-social Skills (top percentile)	56% (27)		57% (16)	46% (13)	1.42	NS

5.4c Positive factors in Cycling and Comparison group at Phase 2

When positive factors were examined across the two groups at Phase 2 (see Table 5.5), there were no higher rates in the cycling group than the comparison. In fact, support was higher in the comparison group, as was the presence of a role model. This is due to the unexplained increase in positive factors in the comparison group. Therefore, despite increase of positive factors in the cycling group (role model and support) this was not confirmed in cross-group analysis.

Table 5.5

Comparing positive factors between cycling and comparison groups at Phase 2

	Cycling group %*	Comparison group % n=28	χ^2 (1)	P
Support	89% (24/27)	100% (28)	3.29	NS
Support 2+ sources	35% (10/27)	66% (19)	5.22	.03
Adult role models	62% (18/29)	75% (21)	1.1	NS
Pro-social	58% (18/34)	42% (13)	0.2	NS

- Totals vary due to some missing sections

5.4d Wellbeing at follow-up

Changes in SDQ wellbeing were examined in the cycling group between Phase 1 and Phase 2 follow-up. There was an increase in wellbeing (29% (10/34) versus 38% (13/34) (χ^2 9.1, 1, $p < .004$). Rates in the total group at Phase 1 were 33% (20/60), so follow-up rates do show a modest increase if compared with the total group.

In the comparison group there was however also an increase in wellbeing but this did not reach statistical significance. The rates were 14% (4/28) at Phase 1 versus 25% (7/28) at follow-up (χ^2 1.5, 1, NS). Rates in the total group at Phase 1 were 25% (12/48) identical to that in the subgroup at Phase 1. When the two groups were compared at follow-up, the rates of well-being were 38% in cycling and 25% in the comparison group (χ^2 1.2, 1, NS) (see figure 5.6). Again, despite significant increases in wellbeing in the cycling group, this did not show in cross- group analysis.

5. 5 Changes in Disorder

5.5a The cycling group change in disorder

The rates of SDQ disorders were examined at both Phase 1 and Phase 2 in the cycling group (see table 5.6) using chi square tests to look for significant differences. Rates of disorder in the subgroup followed up were found to be similar to those in the full cycling group at Phase 1 (see column 1 and 2). At Phase 2 there was a small reduction in all disorders (table 5.6 column 3 & 4) with only conduct disorder reaching statistical significance.

Table 5.6

Change in disorder at follow-up – cycling group only

SDQ Disorder Case/borderline n=34	Phase 1 total group	Phase 1 (those with f-u)	Phase 2	χ^2 (1)	P
Hyperactivity	7% (4)	9% (3)	3% (1)	.09	NS
Conduct	32% (19)	29 % (10)	23% (8)	5.9	.03
Emotional	15% (9)	14 % (5)	9% (3)	.97	NS
SDQ any disorder borderline**	35% (21)	32% (11)	32% (11)	12.1	.001 NS
SDQ Any Case disorder **	28% (17)	26% (9)	26% (9)	0	NS

** dichotomized variable so no T test scores

The finding that requires explanation is the apparent significant relationship of T1 and T2 SDQ borderline disorder in Table 5.6, despite the same level of 32% (11) at both time points. This is due to the high rate of individuals with disorder at both times (24% or 8/34) which shows as an association of the measure. There were however, equal rates that had disorder only at Phase 1 or Phase 2 (9% or 3/34). This suggests that 24% had chronic disorder which lasted the full 9 months of the study, with 9% who recovered and 9% new onsets. This was not observed to any great degree in other individual disorders.

5.5b The Comparison Group change in disorder

Table 5.7 shows rates of SDQ disorder over time in the comparison group. The Phase 1 total group and subgroup followed up had similar rates (See Column 2 and 3). Unlike the cycling group, there was no sign of reduction in symptoms, in fact Hyperactive disorder levels increased (See Column 4 and figure 5.8). For SDQ borderline only 11% (3/28) individuals had disorder at both time points, with 18% (5/28) having disorder at Phase 1 and a similar rate of 21% (6/28) having disorder at Phase 2. Thus, while disorder rates were similar at both time points, this reflected episodes of likely short duration.

Table 5.7

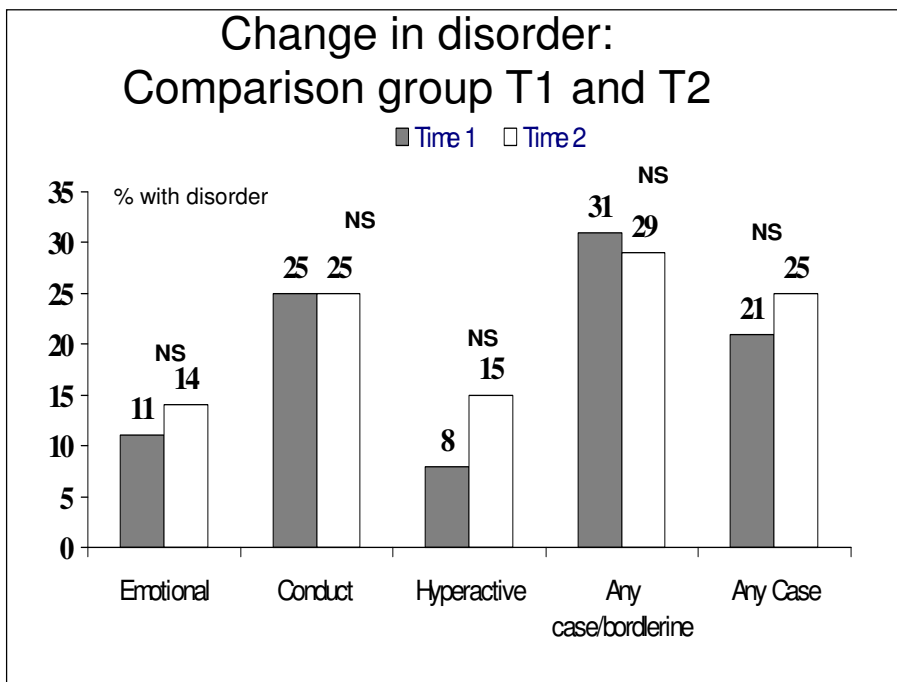
Disorders Phase 1 and Phase 2 – comparison group

n=28 followed up at both Phases

	Phase 1 total comparison group	Phase 1	Phase 2	χ^2 (1)	P
Hyperactivity	7% (4)	8 % (2)	15% (4)	2.28	NS
Conduct	29% (14)	25 % (7)	25% (7)	.06	NS
Emotional	13% (6)	11 % (3)	14% (4)	.98	NS
SDQ any disorder borderline	31% (15)	31% (9)	29% (8)	.14	NS
SDQ any case level	16% (8)	21%(6)	25% (7)	3.17	NS

Figure 5.1

Change in disorder: Comparison group



5.5c Comparing disorder in cycling and comparison groups at follow-up

Finally the cycling group and comparison group were examined at Phase 2 follow-up to look for any significant differences in disorder as hypothesized. When the cycling and comparison groups were compared for disorder at Phase 2, (Table 5.8) only Hyperactive disorder was substantially lower in the cycling group (3% in the cycling group vs 14% in the comparison group), but

this did not reach statistical significance. There was also a lower rate of Emotional disorder (9% cycling and 14% comparison, but again non-significant. There was no difference in Conduct disorder rates. There were also no differences in overall SDQ disorder or at case level.

However, the proportion that had disorder at both time points was double the rate in the cycling group (24% versus 11%). It is possible that on a larger group this would reach statistically significant levels.

Table 5.8

Comparing Disorder between cycling and comparison at Phase 2

	Cycling (n=34)	Comparison (n=28)	χ^2 (1)	P
Hyperactivity	3% (1)	14% (4)	2.63	NS
Conduct	24% (8)	25% (7)	.02	NS
Emotional	9% (3)	14% (4)	.45	NS
SDQ any disorder borderline	32% (11)	32% (9)	0	NS
SDQ any case level	26% (9)	25% (7)	1.36	NS

Thus it can be seen that disorder differences were not found at statistically significant levels as expected when comparing cycling and comparison groups at follow-up. However, some reduction in disorder was found in the cycling group alone and rates of Hyperactivity were substantially lower among the cyclists at follow-up.

Overall, it can be seen that change was observed in the follow-up period, with some significant findings in the expected direction of both reduction of risk and disorder in the cycling group alone, but with few of these remaining when cycling and comparison group examined at Phase 2. However, such findings need to be considered in the light of low numbers and by changes happening naturally in the comparison group.

The next section will examine life events and trauma experience and PTSD at follow up to see if increases in stressor may explain some of the findings.

5.6 Life events, trauma and PTSD at follow-up

5.6a Life events at follow-up

The young people were asked if they had experienced any upsetting life events between the two test Phases. It was important to see if the presence of such events might mask any positive effects of the intervention and therefore keep risk and disorder high. Examples of such events were moving home, serious illness in self or family, parents arguing, parents losing their job, breaking up with boyfriend/girlfriend, bad school grades and involvement with the law. Most children had experienced a life event in the follow-up period – as many as 71% of the cycling and 89% of the comparison group (NS). When a score of number of events (2 or more) were taken, there was still no difference between the two groups (52% in cycling group and 48% in the comparison group, NS). The most frequent events noted by the young people were ‘breaking up with girl/boyfriend’ (26%) and ‘receiving bad grades’ (30%), ‘parents not having money’ (24%), ‘being suspended from school’ (19%), ‘family illness’ (17%), ‘family accident’ (12%) and ‘not being allowed to join a team’ (15%).

Table 5.9

Rates of negative life event in cycling and comparison at Phase 2

	Cycling N= 31	Comparison N= 28	χ^2 (1)	P
Negative Life events 1+	71% (22)	89% (25)	3.58	NS
3+ Negative Life events	36% (11)	43% (12)	.37	NS
Any 1 trauma event	35% (20)	26% (15)	1.32	NS

Given the context in which the study was undertaken, it was important to also know how many had experienced a traumatic event and what types of traumatic events they were exposed to which might mitigate against any positive benefit from the cycling experience. The cycling group experienced somewhat more traumatic events than the comparison group in the follow-up period (35% vs 26%) but not at a statistically significant level. Of these events, reports of 'seeing someone beaten up, shot or killed' were reported by twice as many of the cycling group (27% vs 14% of the comparison group (χ^2 1.3,1, NS). Being in a bad accident occurred for 19% of the cycling group compared to 11% of the comparison group (χ^2 .75,1, NS). However one event - 'hearing about the violent death of a loved one' was reported slightly more often by comparison young people (54% vs 47% of the cycling group (χ^2 0.26 , 1, NS). Thus both groups continued to experience both life events and trauma events in the follow-up period.

Thus the high rate of continued stressors occurring in the follow-up period needs to be considered as a possible suppressing factor for positive benefits of the intervention and increases in risk or disorder in the comparison group.

5.6b PTSD changes at follow-up –cycling group

The analysis was then repeated for changes in PTSD at follow-up, first in the cycling group. Since there was no full PTSD in the subgroup followed up at either time point therefore only partial PTSD and the symptom Criteria will be examined. The rates are shown in table 5.10. It can be seen that rates in the subgroup at Phase 1 who were followed up, were essentially the same as the full cycling group at Phase 1. There were reduced symptom rates of partial PTSD at follow-up (20% to 7%) but not at significant levels, and of Re-experiencing (B criterion - 39% vs 13%, NS) and Avoidance (C criterion - 13% vs 3%, NS). Only Hyper-vigilance (D criterion) approached a statistically significant level ($p < .09$).

Table 5.10

PTSD changes in Cycling group

(There were no individuals with full PTSD in the follow-up sample)
n= 31

	Phase 1 total cycling	Phase 1 (those with f- u)	Phase 2	χ^2 (1)	P
A Criteria	58% (35)	67% (21)	58% (18)	2.83	NS
B Criteria (Re- experiencing)	43% (44)	39% (12)	13% (4)	.57	NS
C Criteria (Avoidance)	15% (17)	13% (4)	3% (1)	.19	NS
D Criteria (Hyper-vigilance)	35% (36)	20% (6)	3% (1)	3.53	p<.09
Partial PTSD	31% (33)	20% (6)	7% (2)	.98	NS

5.6c PTSD changes in the Comparison Group

PTSD symptoms were then examined in the comparison group between Phase 1 and Phase 2. The subgroup followed up had similar rates to the total comparison sample at Phase 1 (see table 5.11, column 2 & 3). There was also a reduction in most PTSD symptoms at the Phase 2 follow up. This reached significant levels for Re-experiencing (B Criterion) and Hyper-vigilance (D Criterion) and partial PTSD (See Table 5.11).

Table 5.11**Changes in PTSD in Comparison Group (N= 28)**

	Phase 1 Total comparison	Phase 1 those with f-u	Phase 2	χ^2 (1)	P
A criteria	50% (24)	60% (17)	46% (13)	.015	NS
B Criteria (Re-experiencing)	46% (20)	43% (12)	36% (10)	4.63	.05
C Criteria (Avoidance)	17% (8)	18% (5)	11% (3)	0.51	NS
D Criteria (Hyper-vigilance)	38% (18)	32% (9)	14% (4)	7.17	.02
Partial PTSD	38% (18)	32% (9)	14%(4)	3.91	.08

5.6d PTSD in Cycling and comparison groups at Phase 2

When PTSD and its criteria were compared in the cycling and comparison group at follow-up, lower rates were found for the cycling group in all categories apart from the event A criteria (See Table 5.12) Only Re-experiencing (B criterion) reached a significantly lower rate in the cycling group than in the comparison group (10% vs 32%, $p < .05$). The lower rate of partial PTSD in the cycling group (6% vs 14%) did not reach statistical significance. Therefore despite higher events and A criterion, the cycling does seem to have marginal positive effect on PTSD criteria although only Re-experiencing the trauma is clearly at significant levels.

Table 5.12**Comparing PTSD between cycling and comparison groups at Phase 2**

	Cycling Group % (n=31)	Comparison Group % (n=28)	χ^2 (1)	P
Criteria A	58% (18)	46% (13)	0.17	NS
Criteria B (Re-experiencing)	13% (4)	32% (10)	4.63	.05
Criteria C (Avoidance)	3% (1)	11% (3)	1.35	NS
Criteria D (Hyper-vigilance)	3% (1)	14% (4)	1.31	NS
Partial PTSD	6% (2)	14% (4)	0.94	NS

5.7 Summary and conclusion

The third research question concerning positive effects of the cycling intervention cannot be answered with confidence given the high attrition rates and resulting low numbers, but is indicative of positive effects of the cycling intervention. The cycling group had significant reductions in low self-esteem, increases in the presence of a role model and of support and significant reductions in Conduct disorder. They also had a significant reduction of partial PTSD and both Re-experiencing and Hyper-vigilance criteria. Differences between groups were affected by some positive changes in the comparison group, but Re-experiencing trauma was significantly lower in the cycling group than the comparison. Other changes in risk and disorder did not show as significant, in part because the comparison group had decreased rates of peer problems, increased positive experience, and spontaneous reductions in PTSD symptoms at follow-up.

5.7a Summary of changes in risk factors

- There were reductions in low self-esteem in the cycling group which was significant, suggesting positive psychological impact of the cycling intervention. There was however no reduction in peer problems.
- There were no significant differences in risk factors in the comparison group although peer problems reduced at Phase 2.
- There were no significant differences between cycling and comparison group on rates of risk factors at Phase 2.
- Despite some evidence of positive psychological change in the cycling group, this was not reflected in the between group comparisons. Peer problems were unaffected by the cycling intervention.
- There was an increase in positive factors (support and the reporting of positive role models) in the cycling group significant at 5%-10% significance levels. There was no change in pro-social behaviour rates.
- The comparison group also reported higher rates of support and role models at follow-up, although not at statistically significant levels.

- The only differences in positive factors between the groups were unexpected, and reflected higher rates in comparison group of support and the presence of role models. Thus, while there was some suggestion of increased support in cycling as hypothesized, this effect was nullified in group comparison by an unexplained higher rate in the comparison group.

5.7b Summary of SDQ disorder at follow-up

- There were modest reductions in all disorders in the cycling group at follow-up with significant reductions for Conduct disorder
- There were no significant differences in disorder over time in the comparison group although increases in hyperactivity and SDQ any case levels.
- There were no statistically significant differences in disorder between the two groups at follow-up, although lower rates in the cycling group for Hyper-active disorder.
- Therefore Conduct disorder showed most improvement among the cyclists but this did not hold in group comparison. Some lower rate of Hyperactivity was found in cyclists in group comparisons.

5.7c Summary of changes in PTSD at follow-up

- There was reduction in PTSD symptoms in the cycling group at the two Phase points, but only Hyper-vigilance (D criterion) reached statistical significance at the 9% level.
- There was more reduction in rates of PTSD in the comparison group with significant differences in Re-experiencing (B criterion) and Hyper-vigilance (D criterion).
- There were lower rates of PTSD in the cycling than the comparison group at follow-up. This reached statistical significance only for Re-experiencing (B criterion) at the 5% level.
- Reductions in PTSD occurred in spite of high level of life events and trauma events. The presence of such events may have mitigated against greater reductions in the cycling group of PTSD symptoms and disorder.

5.8 Conclusion

The chapter examined the prospective part of the study looking at change over time of young people undertaking a cycling intervention versus comparison young people. The results were indicative of positive effects of cycling on low self-esteem, Conduct disorder, and PTSD criteria of Hyper-vigilance and Re-experiencing. However, small numbers restrict the interpretations that can be made. Other complications include some positive changes in the comparison group, despite having no formal intervention, and the high rates of life events and trauma that persisted in the follow up period.

However, these preliminary results are encouraging in suggesting positive impacts of cycling intervention on young people with regard to both conduct problems and trauma responses and in relation to support and low self-esteem. The responses of both young people and coaches in focus groups and interviews will be examined in the next chapter.

Chapter 6 – Qualitative results of cycling experience

6.1 Introduction

This chapter presents the thematic analysis of the focus groups and interviews to describe the young people and coaches' experience of the cycling intervention. The aims of the focus groups and interviews were to provide depth to the quantitative part of the analysis, and to examine new factors which might emerge.

The analysis of the qualitative measures is described in chapter 3 as progressing according to themes based on the questions asked at focus group or interview. These questions had been designed to ask about the experience of the intervention and any positive benefits as well as how well implemented. However, flexibility in the approach, whereby the themes are developed in discussion allows for new topics to arise. A thematic analysis is a method for “identifying, analysing and reporting patterns (themes) within data” (pg 79) (Braun & Clarke, 2012). This method is widely used, is flexible and is not tied to any one conceptual framework (for instance critical realism or existentialism). It is therefore, up to the researcher to determine the purpose and decide the themes based on the data produced (Braun & Clarke, 2012).

The focus groups were audio-recorded and the content transcribed and translated ready for analysis. Quotes generated were all coded in relation to the themes developed and questions asked. The ones selected for presenting in the chapter reflected either typical views and this was noted, or described the range of views expressed. A suggested process of doing thematic analysis as described by Braun and Clarke (2008) involves “1) *Familiarizing yourself with the data through transcribing, reading, re-reading* 2) *Generating initial codes from the entire data set* 3) *Searching for themes within the codes* 4) *Reviewing the themes to see if they align with the codes* 5) *Defining and naming the themes and forming the story* 6) *Relate story back to literature, original research question and use particularly vivid, compelling extracts to illustrate themes.*” (page 87)(Braun & Clarke, 2012).

This procedure was followed in relation to the interviews with coaches and the focus group. Questions to the coaches revolved around what they thought was the purpose of the cycling programs; questions for the focus groups were on how the cyclists felt about the cycling, how they dealt with stress and what they were afraid of. An example of themes from the question on how they felt about the cycling included: “skill building”, “Enjoyment/fun” and “stress releasing”. The themes were then written into a coherent narrative and results were compared with research literature.

In addition to the qualitative analysis, there were a few questionnaire items at follow-up on the cycling experience (answered only by the cyclists). The young people in cycling responded that 75% liked the cycling ‘very much’, the remainder liking it ‘a lot’. When asked to identify what they liked, 50% responded ‘Everything’ with other responses being ‘new friends’ (21%), ‘competing in races’ (8%) coach made me feel good (4%) opportunity to ride (4%) and feeling good (4%). There was, however, some dissatisfaction raised by 12 children: for example 2 young people did not ‘like the other children’, 5 found the cycling difficult and 5 had ‘other reasons’ for dissatisfaction not specified.

6.2 The Focus Groups

The focus groups are described in chapter 3, but to summarise, these were run with 4 groups from the cycling clubs in different parts of the country with one group not having undertaken the cycling yet. Each group included 7 to 10 children (average of 8) and 2 adults and lasted up to 45 minutes and were audio-recorded. The youth ranged in age from 12 to 16 and were all boys from both Jewish and Arab communities. All were conducted in the community setting where the children cycled.

The groups were facilitated by the local researcher who spoke Hebrew and Arabic to ensure that the children understood the questions and were comfortable with expressing themselves without being hindered by language difficulties. The coach or support person for that group was also present to

assist with clarifying ideas and supervising the groups. The facilitator had extensive experience working with young people and ensured the discussion was maintained. Food was served to the children.

6.2a Questions explored

Questions for the focus groups were determined in advance based on elements of the quantitative analysis. They revolved around coping with stress, accessing support, leisure activities as a way of relaxing and experience of the cycling programme.

The purpose of the focus group was to gain an understanding of:

- The young people's attitudes to danger, and how they dealt with stress
- Who they go to for support
- What the young people do for fun/what makes them feel good
- What the cycling program did for them.

It was important to consider group dynamics as a key element that set focus group data apart from other qualitative styles of measurement. The style of interaction, i.e. whether finding a consensus on an issue, disputing it or saying nothing, can provide some insight into the topic under discussion (Kitzinger, 1995). In some of the cycling focus groups that there were periods of silence in the beginning of the discussions where no one seemed to want to be the first to speak. The researcher had to work hard to get answers from the youth by asking questions in different ways where they seemed reluctant to give information. However, in all the groups, once the young people began to talk, the discussion flowed.

The findings below are grouped according to the key questions and themes determined.

6.2b Watching out for danger/ coping with stress

In the quantitative analysis, many young people responded "Most of the time" to the questionnaire item "I watch out for danger or things I'm afraid of" as part of the criteria for Hyper-vigilance. This topic was developed further in the focus groups as it was thought to deepen understanding of such Hyper-vigilance and response to danger.

The young people talked about the types of things they were afraid of. Many of them mentioned avoiding places where they knew there were people who could hurt them, for instance, the shuk (open market), places where bullies hang out in the school ground, bad neighbourhoods, places where drugs and alcohol are used:

“Sometimes when I am on my way back home, somebody will come up to me and say that ‘I am your father’s friend, come and I will give you a ride’. Then we need to think and know what to answer. Have we ever seen him before?” (Joulis participant)

“... around the stadium there is a school and many students stay there. They are picking on the people that go by” (Dalyat El Carmel participant)

“Not to go into neighbourhoods where there are criminals, not even to get close to places like that, or places that you are not familiar with, like for instance the shuk (open market).....and all kinds of criminals, it is prohibited to go into those places” (Beit Shemesh participant)

“Drugs. Yes, for instance adult clubs were they have alcohol and drugs. Or any gathering where they might have alcohol or drugs” (Ma’aleh Yoseph participant)

Others recalled past events when they were very afraid. For example one described how worried he and his family were when an uncle was thought to have been injured in a plane crash:

“Once my uncle was in Barcelona and he was about to come back to Israel. We didn’t know which flight he took and during that same day an airplane crashed in Barcelona. We were very shocked and worried” (Dalyat El Carmel participant)

For the most part, it seems that the dangers that the young people look out for were more local, immediate and familial, and not related to the on-going

political conflict. The young people did not mention events related to the on-going conflict between Arabs and Jews and/or Hamas/Israel. However, one young person did mention the bombing in July 2006 as frightening:

“In the war a couple of years ago, the sirens used to blast and we only had one minute to run down the stairs to get to the shelter” (Dalyet El Carmel participant)

6.2c Dealing with stress

This question was linked with the first question and aimed to find out how they dealt with being on guard and with the high number of stressful events they said they experienced. The young people talked about various ways in which they dealt with stress.

Some avoided thinking about it :

“I don’t think about it, I walk and don’t think about it.” (Beit Shemesh participant)

Some distracted themselves by doing other things to take their minds off of bad thoughts:

“For example, sometimes, if I am irritated by something at school, I come to the cycling group and take out my aggravations, instead of yelling at people or cursing them or getting angry at others, I come to the cycling group and take out all my aggravations.” (Beit Shemesh participant)

A few said listening to music helped to calm them:

“If I have to go by a neighbourhood I am afraid of, I play music and I think about the song and on other things and not on that particular place.” (Beit Shemesh participant)

A few were more specific about their psychological avoidance, avoiding the thing or person or thoughts that cause the stress or bad feelings:

“I disconnect myself and isolate myself from the surrounding area that is causing tension. By doing this, and making some distance, I calm down” (Ma’aleh Yoseph participant).

6.2d Sources of support

The majority of the young people said they go to their parents for support and guidance. Siblings were the next most frequent support followed by friends. In the questionnaire, 70% said they are closest to their parents and siblings. The family was the first line of support for these young people, which illustrates how important the family sphere is for stability, reassurance, approval, guidance and love.

However, one participant perceived the limits of parental support:

“In my opinion, your parents could help you but less so than your friends because parents have their own problems and many more than we have” (Bet Shemesh participant)

Some dismissed outside support and dealt with problems themselves:

“I will give it some personal thought. I will turn to my family. I will try to take care of it myself, lets say, in the best way possible, without beating someone, or other actions” (Beit Shemesh participant)

A few young people mentioned the importance of having parental support to participate in the cycling (The YP do not have to pay to use the One 2 One bikes. This young person bought his own bike and brought it to the club.) :

“Initially, when I bought the bike my mother didn’t know and my father went with me to buy it. In the beginning when I came to the cycling group, my mother didn’t allow it and she began to be angry with me and said ‘why did I buy a bicycle for this price?’ and ‘why this?’ and that. Afterwards she saw me when I competed in a competition and saw how much I loved cycling and how good it was for me and she understood that it was not a mistake to allow me to cycle. She knows that I love it and she cannot come and like, take away the bike because I love it so much”. (Bet Shemesh participant)

The YP were asked about what makes them feel good or what do they do to make themselves feel better. The responses to this question ranged from: sports, playing on computer, spending time with friends, spending time in nature, going on outings (shopping, with family, new places) and generally keeping busy. The idea of setting and achieving personal goals was also

mentioned as a way of feeling good: *“to succeed in exams and personal challenges that I set for myself spiritually”* (Ma’aleh Yoseph comparison group). For this young person, attaining personal goals gave him the motivation to succeed and personal satisfaction when he had succeeded.

6.2e The benefits of cycling

For the majority of the young people involved in the cycling, their responses indicated it was fun, as well as an opportunity to participate in one of their favourite pastimes (54% said sports was their hobby) and it was an opportunity to make friends. A proportion said it relieved boredom and stopped them from smoking, drinking and using drugs.

“It helps me occupy my free time. Instead of sitting around and watching TV, I come to the group and it helps me. I also am developing my fitness capability more and that helps me. It gives me satisfaction!”
(Beit Shemesh participant)

“... when I am bored at home I take a ride on my bike, go out for a spin and in my free time I go to the group activity.” (Joulis participant)

“It gives us a great time, simply terrific! It is enough for us, Instead of doing what other kids do when they have nothing to do and from boredom they degenerate and start smoking and drinking alcohol and all kinds of other things. Instead we come here and have this activity.”(Beit Shemesh participant)

“In my opinion, biking helps me not to drink. Let’s say if I wasn’t into cycling I would be drinking all kinds of things.....if it think about it, if I drink and smoke I won’t have the physical ability for cycling If, for instance, I wasn’t into cycling I would be smoking and not thinking ahead. Cycling lets me think ahead, think a bit forward.” (Beit Shemesh participant)

Many of the cyclists mentioned how cycling allowed them to become absorbed in activity *“it’s kind of like a vacation. Enjoyment. It helps us to think*

and clear our minds' (Joulis participant). Many revealed how they used cycling to take their mind off of their problems:

"When people irritate me I come home and I am simply no longer irritated. I know my bike is waiting for me there and I go for a ride and calm down. I simply ride, take a spin on my bike" (Beit Shemesh participant)

Many of the young people talked about how they learned to first ride a bike, and then learned new skills in cycling particularly how to go downhill, do tricks with the bikes, fix the bikes:

"In the past, I learned how to ride a bike during the course. I didn't know that before. I didn't know how to ride" (Joulis participant)

"Yes we learned about how to ride. We learned how to fix a broken bike and how to maintain it. We learned new things" (Joulis participant).

A few of the young people mentioned the personal satisfaction they gained from participating in the program:

"For example, my mother sometimes, like, knows there are a lot of kids in school who smoke and stuff and then she asks me if I have tried it and this time I tell her that if I am a cycling star and part of a sport team I can not allow myself to ruin myself, my lungs and my body" (Beit Shemesh participant)

One young person hoped that he could use the cycling as a career:

"It might be a living source of income for us. I might win certain competitions." (Dalyat El Carmel participant)

Sometimes, the cycling was too difficult making it less fun:

"The practice and exercises were a little bit difficult. I wasn't the first one to finish. I am talking about the cycling exercises" (Joulis participant)

6.3 Discussion of focus group findings

One purpose of the focus groups was to explore why so many young people were regularly “watching out for danger” or “things they were afraid of” as this was a recurrent response in the PTSD Reaction Index. It’s hypothesized that the ‘watching for danger’ may be an internalized message, part of Israeli social reality, and constructed from the on-going conflict. The young people live in an on-going ethnic/political conflict that has lasted almost two generations. Moreover, Israeli children are regularly reminded to watch out for dangerous packages and people in public places as an anti-terrorist measure. The question in the Reaction Index about fear of reoccurrence may have provided an avenue for pre-occupation with conflict-related matters to percolate up to the surface.

However, the political conflict was not perceived as the most pressing fear expressed by the young people. Most of the young people were worried about bullying and more localised threat in their neighbourhood. This was despite a third having experienced a traumatic event, the predominant event was hearing about a violent death or serious injury of a loved one. It may be that the young people in the focus groups either 1) don’t perceive watching out for danger in a political light and take it as normal life 2) may feel fear but don’t voice it as its common feeling 3) are simply not afraid of the conflict or 4) unwilling or uninterested in addressing these topics or feelings with the researcher. All seem plausible explanations.

A quarter of the young people said that they feared bad things would happen again. Perhaps this sense of on-going danger perhaps helps society, particularly those in long term conflict, to deal with the continuous “ambiguity and unpredictability” (pg 243)(D Bar-Tal, Chernyak-Hai, Schori, & Gundar, 2009) of conflict. It can also provide a shared, coherent, meaning to the situation, with the society finding a way of coping by filtering information (D Bar-Tal et al., 2009). However, it also reflects a pessimism about things improving.

It is further suggested that Israelis' social reality, for both Arab and Jews, is based on what Bar Tel describes as "self-perceived collective victimhood" (D Bar-Tal et al., 2009) or "collective insecurity"(Hammack, 2010a) where everyone believes they are victims and will be further victimized. Those within the conflict are members of this collective even though on different sides, but maintain shared beliefs about themselves and the conflict.

This collective insecurity is felt by both sides. Indeed, the persistent nature of the conflict, lasting for generations, has been argued to have created "*highly polarized groups who view themselves as oppressed, victimized, or righteous and views the other as the cause of their troubled conditions*" (page 770)(Maoz, Ellis, & Lester, 2008). But there is a distinction between how each group sees themselves. Bar Tel explains:

"Palestinians portray Israel as an imperialist power, sometimes comparing Jewish soldiers with Nazis. Israeli Jews...insist they are victims of Arab aggression. These two groups are striving to achieve a moral social identity by favouring their own-group tragedies over those of another" (page 247) (D Bar-Tal et al., 2009).

While a personal reflection by the researcher was that this distinction was evident in conversations with any Israeli adult over the conflict, it was not mentioned by the young people in the focus groups. Perhaps this is because these beliefs tend to be formed in late adolescence as noted by Hammack who undertook several narratives with Israeli youth both Arab and Jews at and found that older youth develop a group identity that "*reveal a deep and abiding connection to a socio political reality of nationalistic conflict*"(pg 382)(Hammack, 2010b) but this was not common in early adolescence.

Another reason why conflict was not raised in the focus groups may also have been because the YP did not want to reveal information deeply held within themselves with a stranger, who was not clearly aligned to either community. Moreover, if the focus group was a mixed group of Jews and Arabs in a friendly setting, thus they may not wish to express their beliefs with those they believe to be friends, or that it was not an appropriate topic of discussion for

this context. Or it may be that these young adolescents are more focused on their personal lives, appropriate to their stage of development with more in common with adolescents in other parts of the world.

What can be surmised is that these young people live in an abnormal environment. They are regularly on guard for danger, and many feel that something scary will happen at any time. However, that fear is attuned to their neighbourhoods rather than national issues. They may well feel the polarization and have internalized the 'collective insecurity' but this was not expressed. Or they may screen out threats from the political conflict which they have normalised, and their social world is fixated more on friends and local activities.

The young people's reports of dealing with stress in the focus groups emphasizes distraction or avoidance and may relate to the 17% having Avoidance (Criteria C) in the PTSD scales. The stressful events reported by the young people were again related to their immediate surroundings: family life, relationships with peers, and problems at school. The means by which they claim to deal with these events are by using activities such as cycling to take their attention away from stress.

A plausible interpretation is that these YP have developed coping mechanisms to deal with stressful events. Whilst disconnecting from experience may indicate PTSD responses, being distracted may be a more appropriate way of coping with stressful events for this age group (Skinner & Zimmer-Gembeck, 2007).

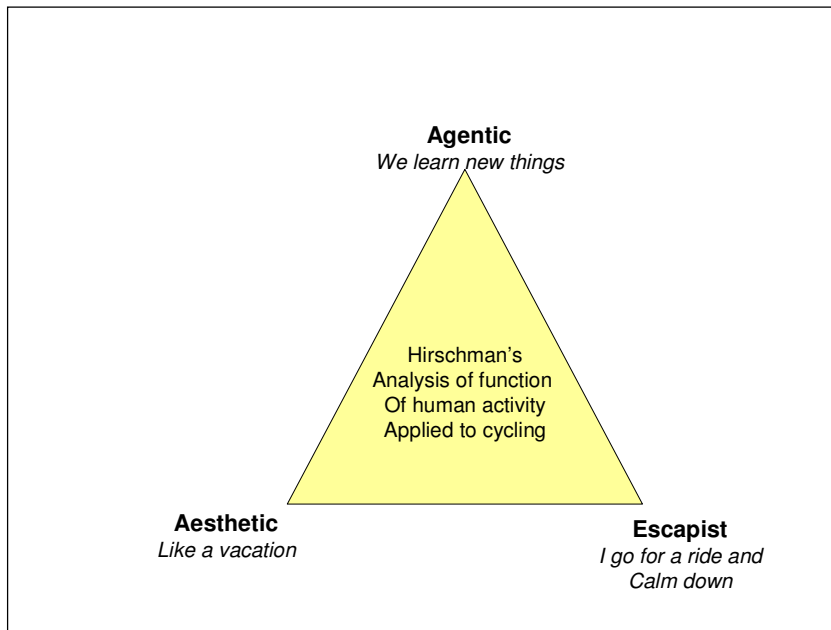
Having an identified source of support is recognized as a key factor in reducing emotional and behavioural problems in young people and an affective coping strategy (Bal, Crombez, Van Oost, & Debourdeaudhuij, 2003) (Garnefski & Diekstra, 1996; Hamilton, Needle, & Wilson, 1985). Indeed, young people who perceive they have low family support are more likely to participate in avoidance coping techniques and to experience trauma symptoms (Bal et al., 2003). However, the role to which support buffers the

effects of trauma is not clear (Schiff, Pat-Horenczyk, et al., 2007; Wertlieb, Weigel, & Feldstein, 1989). The activities the young people said they did to deal with stress or make themselves feel better seemed to align with the function of fun which is discussed in detail below. These activities served to distract and were forms of enjoyment.

For the young people, the cycling was described as 'fun'. The idea of fun as the end goal of an activity is often minimized in the adult world and dismissed as unproductive activity. However, fun serves a valuable purpose. It can allow YP to 'forget' themselves, to become absorbed in an activity, forget problems and a means to acquire new experiences untainted by stress. For comparison with other types of intervention, Stinson's (1997) research undertook an analysis of young people participating in dance classes. Her analysis revealed that one of the main experiences of the dance class was 'fun' but this meant different things to different participants (Stinson, 1997). She used Hirschman's explanation of the function of human activity of which she narrowed into a triangular framework, the corners of which were Aesthetic, Agentic and Escapist (Hirschman, 1983). Aesthetic referred to how the activity allowed the person to be completely absorbed in the activity and symbolically taken to another place. Agentic experiences refer to how the person uses the activity to acquire knowledge or skills. "Escapist" refers to how the activity was a "*substitute for anxious states*". Indeed, for the young people in Stinson's study, fun in dance meant several things: working with new people, stress release, takes their mind off of things and was intrinsically satisfying (Hirschman, 1983; Stinson, 1997). This intrinsic satisfaction is also found in Csikszentmihalyi's work who saw "*experiences that were intrinsically motivating*" and renamed them "flow" (Csikszentmihalyi, 1990). For an experience to have "flow" the activity needs to not be so challenging as to produce anxiety and may not have external goals. These concepts are applied to the cycling program and to the comparison group's discussion on leisure activities (See figure 6.1 below).

Figure 6.1

A triangular schematic analysis of human functioning as applied to the cycling



In this model, to gain a better understanding of the meaning of 'fun' it was broken down into three functions. Fun meant (i) giving their 'mind's a vacation', (ii) helped to avoid bad thoughts or unhealthy behaviours and (iii) was a pleasant manner of learning new skills. These three elements are likely to be important for personal and mental development and well-being in YP and this is could be of particular importance for those young people who live in an unstable environment. In addition to being fun, the cycling was also expressed as a source of support. The quantitative analysis also showed that support improved in the cycling group after intervention. Fun and support may therefore inoculate against family, personal and community stress.

If this scheme is applied to the focus group responses, then all three elements can be seen to apply:

Aesthetic: The aesthetic quality and being absorbed in activity was mentioned by several of the young people: *"its kind of like a vacation. Enjoyment. It helps us to think and clear our minds"* (Joulis participant). The young cyclists enjoy

this activity and seem to be intrinsically motivated to participate in cycling as they arrive at the cycling club on their own volition.

Escapism: Escapism or substituting the activity for anxious states' was mentioned by several of the young people. Many revealed how they used cycling to avoid drugs, alcohol, smoking, boredom and to take their mind off of their problems.

Agentic: Agentic experiences refer to how the person uses the activity to acquire knowledge or skills (Hirschman, 1983). Many of the young people talked about how they learned new skills in cycling particularly how to go downhill, do tricks with the bikes, fix the bikes. However, the 'flow' of the activity was stopped for some if the activity became too hard, making it not as much fun. The questionnaire responses stated that small percentage enjoyed the cycling but found it difficult, strenuous at times and this made it less enjoyable.

The implications of the fun aspect and the effects of the cycling program are discussed further in Chapter seven. The results of the coach interviews will now be discussed.

6.4 The interviews with Coaches

The purpose of interviewing the coaches was to understand their views on the effect of cycling for these young people and the implementation of the intervention. The coaches spoke with enthusiasm and passion about the program. They perceived themselves as physical and emotional guides for these young people. The coaches discussed what they thought were the difficulties the young people had in their homes, and how they saw them struggling with confidence, hyperactivity, boredom or difficulties with listening.

The coaches in the One to One cycling program were not told about the specific backgrounds of the children in the programs, all they knew before a YP joined the clubs is that Social Services were involved with the family. Therefore their views of the YP are not influenced by specific knowledge of YP behaviour or family background. The following is a thematic analysis of 4 interviews with the One-to-One coaches.

6.4a The coaches interviewed

The coaches came from different backgrounds. One was a physical education teacher in a nearby school. Another was an active member of the Druze community. One of the coaches interviewed is the head coach of the whole program. The coaches were all in favour of the program developed, felt it was effectively implemented. The fact that the cycles were provided for free meant that access was not restricted. There was an insistence on discipline in turning up on time, looking after the cycles, learning necessary skills to be safe and interacting well with each other.

“They come here, I show them, tell them the rules, I was strict.

Something was run, Close the session to show them that you were serious. I have a good side and can show them that I am their friend but its important to stick with the rules and maintain discipline because it can be dangerous. If someone is doing what he wants, it can be dangerous, he can hurt himself” (Kfar Menehem coach)

The responses from the coach's interviews were themed according to the triangular framework for analysis described above. The aesthetic, escapist and agentic elements are used to explain themes that emerged from the analysis of the interviews. The coaches were asked about what they saw as the benefits to cycling and the role they played for the young people.

Aesthetic or absorbing attention: The coaches claimed that cycling was fun. Fun was the *“strength and powerpoint of this activity because they really want to be there”*. (Coach Kfar Menehem). Having 'fun' was the first comment made by all the coaches when they were asked of its benefits. They too, seemed to be having fun and perceived the young people were as well.

The coaches also claimed that the cycling program offered the young people an opportunity to enjoy nature and see new places and these were opportunities to absorb them into a new experience. Again, it seems that the coaches enjoy being out in nature and claim the children do too. Some of the children mentioned that they enjoyed seeing new places, of which, going out in nature was one.

Escapist: This refers to how the activity took them away from other things that caused them to feel anxious, stressed or stopped them from doing unhealthy activities. One coach explained that the majority of young men in his group smoked and they would talk about stopping or reducing their smoking because they were unable to go as far as they wanted:

“...they want to be better because they want to go farther, they want to see other parts of the forest...but if they are not in shape they cannot stay in the same circle..” (Kfar Menehem).

The coach also claimed that the cycling gave the young people the motivation to quit smoking, and lead a healthier life. This echoed comments of the young people described earlier.

All of the coaches viewed the cycling as a constructive way to deal with stress and think about problems:

“When you are alone or cycling alone, you are with a group but you are alone. You are thinking about your feelings, your problems, your job and that’s the advantage of this. People make run to make sport but then one day they decide that they are not running for sport they are run to help with problems. To calm, to handle the problems, to think deeply, not shallow. It’s very important. Things in your life that you must make a decision about and its not instinctive. These decisions made from doing these individual sports make good decisions. People in cycling and running are more calm”. (Dalyat El Carmel coach)

Agentic: How one uses an activity such as cycling to acquire knowledge or skills was noted by all of the coaches. The coaches believe that the young people improve their cycling skills, learn how to maintain the bike, learn how to focus and discipline themselves, acquire self-control and this in turn increases their confidence. They also learn how to help each other, confront fears:

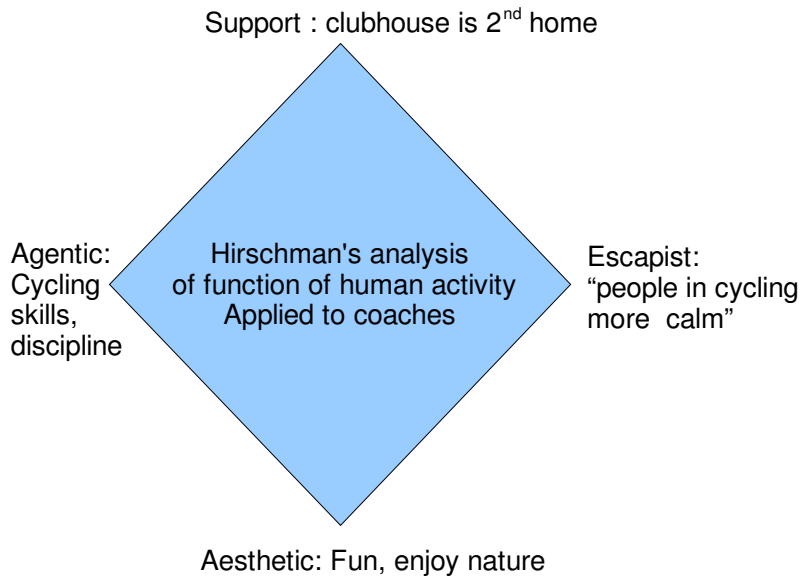
“Another thing they gain from the riding is they confront fears and they have challenges if its downhill and they’re afraid, they overcome the

fear..if its uphill and they're challenged....uphill they have to fight the pain and not give up.....they don't quit...." (Kfar Menehem coach)

The coaches perceived the cycling as opportunities to learn other life lessons too. They saw the children's interaction with nature as important and they took the exposure as an opportunity to teach them about "*how to keep nature and not destroy it*" and to think about "*getting used to use a bike instead of using a car*" (Netanya coach). The coaches also thought the cycling taught them how to be responsible, confident and helpful people: "*First they catch how to help each other. If someone has a flat tire, they come together to help*" (Netanya coach). Self-discipline was another benefit noted by many of the coaches in terms of taking care of the bike and controlling their behaviour so that they can participate in the group. Cycling taught "*the importance of stability*" an "*of committing to something*" (Kfar Menehem coach). When the children didn't control their behaviour, there were direct consequences. One of the coaches talked about how he had to be strict and shut a session down when the children weren't listening: "*If someone is doing what he wants, it can be dangerous, he can hurt himself. He can destroy it for everyone*" (Kfar Menehem coach)

Figure 6.2

Coaches opinions on purpose of cycling program



Support: the coaches also perceived the cycling program as a source of support and friendship:

"the clubhouse is their second home, they feel part of the clubhouse"
(Beit Shemesh coach).

Comments made in the questionnaire about cycling indicated the children saw coaches and friends made in cycling as a source of support. The role of support in mental health of young people was discussed briefly in section 6.2.d. The coaches' parallel what the children believed to be the effects of cycling in terms of social support. It is interesting to note that only the Netanya group named the coach directly as a source of social support in the questionnaires. This may be because this group is more stable and the cyclists have worked with him in previous years. Indeed the Joulis coach said that he tried to keep the group stable, with the same children coming although he did not explain why.

6.5 Other issues

6.5a Where are the girls?

Nearly all the cyclists were boys. There was a brief discussion as to why there are no girls in the program with the coach in Dalyat El Carmel, a Druze village. The inclusion of girls was seen as a good thing as it changes the dynamics of the group making it “relaxed and easy” (Beit Shemesh coach). It seems that cycling is not culturally appropriate for Druze girls yet but this coach believes that in time, it will be acceptable for girls to ride bicycles in this village. The coach observed the behavioural limitations found in his Druze culture but saw this as something that would eventually change with time. He describes how cycling has grown in acceptance in his village:

“At first no, it is strange and new but its starts. Not this year.. not next year, maybe five years, ten years...like the children, like the men. In the village 40 men are now riding. But before they were shy to say they wanted to ride. (Why?) It is not a regular thing. Our religion, society is closed and everyone knows one another and we are a small village in the past. Now we are about 13 000 in the village. In the past 20 years, it was 5-6000. Everyone knows one another and they think its for children to join not for men or for women. Women, now-No. I know a few women that ride but not in the village-not here. But it is starting. The religion-riding the bike is not regular. We become free.” (Coach in Dalyat El Carmel).

Six girls joined the cycling club in Beit Shemesh during the follow-up period in November 2008. The investigators had a brief discussion with them about what they saw were the benefits of cycling. The discussion was impromptu as at this point the 2nd questionnaire was being administered and the researcher did not have recording material. The comments on what the cycling meant for them were similar to those made by the boys. They girls said they enjoyed competing with the bike, and it gave them an opportunity to learn to ride a bike

as it was free to participate. They felt that the cycling kept them busy, made them feel good and *“took their mind off of bad feelings”*. They learned bike tricks, bicycle maintenance and how to not be afraid of new places. This is because the coach regularly takes them to new places. The cycling program also helped them to build a social network and was an opportunity to get together with friends. Thus, their experience is similar to the boys.

6.5b Limitations

The focus group information was revealing about the YPs views on danger in society, as well as their strategies for coping and the benefits they perceived from the cycling. Qualitative data is useful for supplementing that derived quantitatively. However, qualitative approaches also have limitations and those in general, and those which applied to this study are outlined here.

A researcher's presence can create bias in qualitative data by being present. Miles and Huberman have developed strategies to minimize the effect of the researcher on the proceedings. To lessen the effect of the researcher, they suggest that the researcher maintain a low profile while on site; try not to disrupt activities or schedules; be very clear as to their intentions with the research and having an informant to help with determining the researcher's effect (Miles & Huberman, 1994). In this study the investigator explained the research intentions directly to the coaches and with the help of the local researcher, with the young people before commencing, in order to comply with ethical procedures, but also to ensure the YP were clear about the focus groups. These were held right before the cycling session was due to begin. The fact that the groups delayed the start of the cycling may have led to the young people being distracted and eager to be away from the discussions and on their bikes which may have curtailed discussion. Having the coach, a familiar person to the young people, present during the focus groups was done to make them feel more at ease. However, this could also have inhibited their ability to criticize the intervention.

Another issue which may have provided bias was that the research was part funded by the One to One charity that also employed the coaches, so there may have been a collective bias to state that the program was helpful. In spite of being assured that responses were confidential, this attitude may have steered the coaches' into more favourable responses about the program. However they appeared to have real concern for the young people and took their role seriously. But their views do not have perhaps the independence of an outside observer.

It is also possible that the requirement for the local researcher and interpreter RA (also funded by One to One) may have unconsciously "crafted responses" throughout the research project to give a more socially desirable response to protect his own and the project interests (pg 265)(Miles & Huberman, 1994). The situation is described by Miles & Huberman:

"local informant interests are fundamentally in conflict with those of the researcher, who might penetrate to the core of the rivalries, compromises, weaknesses or contradictions that make up much of the basic history of the site" (pg 265) (Miles & Huberman, 1994)

Further, there may have been underlying suspicions of the principal researcher, a female, not local and non-aligned across the political divide, leading the project. Despite this possibility, coaches and young people were very co-operative in interviews and focus groups and gave informative responses which sounded very open and expressive.

In spite of these potential sources of bias, the experience of the main researcher in observing the implementation and outcome of the cycling groups was favourable. This included the organisation of the groups, the attendance and the commitment of both YP and coaches.

6.6 Summary and Conclusion

The focus groups obtained personal statements about issues of danger, stress, coping, health benefits, support and leisure. Both coaches and YP

referred to physical health benefits of the cycling around exercise, spending time out of doors, and the effect of reducing smoking and drinking. These are the types of benefits relevant to public health programmes which would benefit any society and would merit a physical health approach to such interventions in parallel with psychological ones.

Interestingly most of the children talked about the more regular stressors of bullying, being in dangerous neighbourhoods etc. rather than reference to the political context. This may be related to their young age and stage of development, the mixed racial composition of the groups or the fact of having an outsider facilitate the groups. They described a number of ways of coping. A threefold categorization of Agentic, Escapist and Aesthetic functions of cycling were applied to their responses to reflect their increased skills, ways of getting away from stress and enjoyment of the activity.

The coaches claimed the cycling activity was a means of alleviating deprivation, helping young Israeli's to deal with stress, learn new skills and enjoy nature. The effects were calming, overcoming fears and helped the YP to make better decisions for themselves. The Druze coach described problems of girls not doing the cycling, and showed how changes are occurring to make the girls and young people freer as the community size increases.

It was possible to apply a threefold scheme of agentic, escapist and aesthetic attributes to the cycling programme in addition to a support dimension. This involves the young people becoming more skilled and active in the sport, their escape from problems with their families and neighbourhood and increasing their enjoyment and leisure.

6.7 Conclusion

There was clear enjoyment of the cycling reported by both young people and coaches with suggestive evidence that cycling formed a distraction from both personal and political conflict issues, giving the young people new skills and challenges, and providing focus and enjoyment. The coaches were extremely

motivated to help the young people and saw a number of benefits of the intervention. Issues that arose were around too few girls being involved.

The next chapter will provide conclusions about the study, giving an overview and relating findings back to the research literature in this area.

Chapter 7: Conclusion

7.1 Introduction

The aims of this study were largely met in determining first the association of various risk and resilience factors with disorders in disadvantaged Israeli youth from both Jewish and Arab backgrounds, and second to examine the effects of involvement in a sport's intervention to see if this decreased risk, improved resilience and lessened disorder over 9-month period. The relationships between risks and disorder were identified, with somewhat less successful identification of resilience factors. Results of the cycling intervention tended to be positive, but were hampered by low numbers with the prospective part of the study underpowered in determining significant effects.

In deriving conclusions about the study, the first part of this chapter discusses the interpretations of the findings in relation to the theoretical frameworks chosen and the existing research literature. The findings of the cycling intervention are discussed in relation to other evaluations of sports interventions in conflict zones. The second part of this chapter discusses the limitations of this study, issues around culture and researching across cultures, and how further research can extend the findings. A comment on how this research contributes to knowledge and implications for others seeking to aid young people in conflict zones ends the chapter.

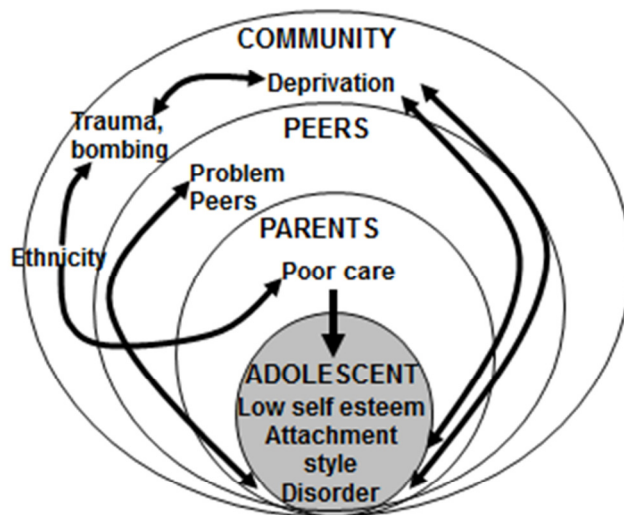
7.2 Theoretical approaches

An Ecological approach to adolescent experience and development focused on concurrent social factors which may have created deprivation and affected the YP personal development and disorder. This reflected the expected influences from the particular turbulent social and political context selected for the study in Israel across ethnic divides. Figure 7.1 illustrates associations (using double-headed arrows for concurrent factors and single direction for childhood care to disorder) found in the analysis at different social levels which influenced adolescent disorder.

Figure 7.1

Ecological approach showing associations

Ecological model illustrating associations found



Many of the Ecological factors identified were found to be associated with SDQ disorder showing the importance of examining social disadvantage in relation to adolescent behavioural disorder. The study also utilized an attachment framework to provide a possible developmental pathway from early parenting experiences to issues around peer relating, self-esteem, insecure attachment style and disorder. This was used here to interweave with the Ecological approach and cover complementary developmental pathways. In figure 7.1 insecure attachment style has been added since it related to material deprivation, showing the association of social ecological and psychological factors. The attachment approach allowed for an exploration of mediating factors. Certain attachment aspects were confirmed, in particular, poor parental care and control in childhood were key factors in relating to risks and disorder. Self-esteem and problem peer group also proved related to childhood experience of care and control, but only the latter mediated with SDQ disorder.

Further details are given below of disorder and related risks in this analysis.

7.3 Disorder in the YP

Rates of borderline or case level SDQ disorder were experienced by a third of the YP, the most common forms being Conduct disorder (31%), with Emotional half that rate (14%) and Hyperactive disorder only 7%. A quarter of the sample met case level criteria. Around a third of young people in this study had partial PTSD, with only 6% having the full disorder. PTSD was related to Any SDQ disorder, and to Conduct disorder in particular. Conduct disorder in turn was associated with Avoidance criteria. The externalizing nature of Conduct disorder is consistent with a more Avoidant response to trauma. In fact Avoidance was the least common PTSD criteria (15%). Thus 43% had Re-experiencing symptoms, 40% criteria A (distress to trauma) and 35% Hypervigilance. These rates are similar to those shown in other Israeli studies (Pat-Horenczyk et al 2007) with Re-experiencing recognized particularly as the most common PTSD symptom in young people (De Bellis & Van Dillen, 2005).

In examining how Re-experiencing symptoms occur (Ehlers, Hackmann, & Michael, 2004) a two-step process has been outlined following experience of a trauma event. First is “perceptual priming” which works as a warning signal so that the person can prepare for a traumatic event and second is ‘associative learning” which involves preparing for an emotional and behavioural response. High Re-experiencing symptoms may be due to the young person’s continuous sense of insecurity (not feeling safe) which may be amplified by poor parental care from an early age and relate to heightened perceptions of danger (Charuvastra & Cloitre, 2008; Cloitre et al., 2009). Findings parallel a study with five hundred Israeli adults regarding their exposure to terror attacks, PTSD symptoms, coping and sense of safety. Whilst only 16% of the sample had direct experience of an attack, 60% lived with a sense of danger and 67% felt their family was in danger. This sense of being unsafe increased PTSD symptoms involving 55% with Avoidance, 37% with Re-experiencing and 49% with hyper-arousal (Bleich et al., 2003). Although rates are similar, it is interesting that those

with Avoidance in that study had the highest rate of feeling unsafe. Issues of safety and security link to attachment themes around having a safe haven in responsive parents and being able to return to a 'secure base'(Bowlby, 1969). The association of PTSD criteria with poor care and high control in childhood are likely to have eroded the sense of safety which then continues in relation to on-going safety issues in the outside world.

In reviewing the PTSD literature, issues discussed included the trauma inclusion, with extended trauma lists recommended to include bombing and political violence. By doing this, the rate of trauma reported almost doubled therefore creating greater eligibility for PTSD. Another issue is that of using subclinical thresholds or partial PTSD which proved useful to showing significant associations with individual criteria of the disorder. Finally, what has not yet been discussed is the issue of chronicity of disorder. This is an important issue in clinical level PTSD since it is included in the disorder criteria – and since the more chronic the disorder, the more its clinical significance and the more likely in YP it may be identified as complex or related to developmental problems (Cloitre et al., 2009; Eth & Pynoos, 1985; Kilpatrick et al., 2003; Perkonigg et al., 2005). In the study reported here, chronicity of PTSD was not measured by questionnaire. However, given there was only modest change in PTSD disorder at a 9-month follow-up, this implies that many symptoms were chronic by second contact. Chronicity is marked by the presence of Avoidance, which was relatively low in this sample (15%) but was a symptom which did not reduce in follow-up. A more detailed assessment of duration of PTSD would be needed to determine its clinical severity and its likely impact on development.

7.3a Material deprivation and disorder

Half the sample was judged to be deprived in terms of indicators of poverty or poor housing. Such material deprivation was highly related to Emotional and Hyperactive disorder, but not Conduct disorder. It also had a modest association with bombing events and the presence of three or more trauma or bombing events. However, deprivation did not relate to ethnicity nor reflect the higher

rate of deprivation amongst Israeli Arabs described in other studies (Coursen-Neff, 2001, 2006; El-Sheikh Muhammad, 2004; Schmid, 2007). Ethnicity had no impact on disorder in this sample and did not account for other risk factors. This may be due to the selection of high risk youth from both communities which would tend to take precedence over more general demographic distinctions. It also suggests that personal and biographical risk can over-ride such cultural factors. PTSD was unrelated to deprivation, ethnicity or gender. This implies that psychological susceptibility may have been of more importance than the social or cultural factors identified. However, insecure attachment style was associated with deprivation. The relationship of insecure style to lower social class has been noted in other epidemiological investigations (Mickelson, Kessler, & Shaver, 1997). The likely reason is that early life adversity, together with problem relationships with partners or parents in the case of adolescents also creates financial and social disadvantage which may be either a precursor or consequence of difficulties with attachment style (Antonia Bifulco & Thomas, n.d.).

7.3b Stress and disorder

Given the nature of the location selected for study, stress was a potentially important factor for disorder, particularly in its more extreme form as trauma in relation to PTSD. Analysis of the types of trauma showed half the sample had inter-personal and 40% trauma related to bombing with substantial overlap. Trauma, while critical for PTSD was unrelated to SDQ disorder. Life events were also questioned about in follow-up and these very common with most young people (80%) reporting one or more. The more common life events included breaking up with a girl/boyfriend, getting poor grades at school and parents having money problems. Other common ones included school suspension, family illness or accident. It is perhaps easy to overlook the personal aspects of stress common to many teenagers in a location notorious for its political conflict. In this sample both types were common experiences in the YP.

Trauma experience was related to ethnicity, with Arabs having more trauma events and more multiples of trauma or bombing experiences than Jewish youth. Experiences of trauma or bombing were also related to Hyperactivity with a modest association with case level disorder. There is little literature on this association. Often Hyperactivity is taken to be a biologically derived disorder with implications for impulse control and difficulty in motor and affective functions (Trott, 2006). The finding of this study provides a potentially important link between trauma experience and Hyperactivity/ADHD which requires further research.

7.3c Peer problems and disorder

Peer problems were a significant risk factor in this study analysis, related to behavioural SDQ disorder (Conduct and Hyperactivity) outcomes. It is well documented in the developmental psychological literature that peers exert a strong influence on adolescent development and on developing behavioural disorder (Fergusson & Horwood, 1999; Muller et al., 2000). These findings show that this holds even in environments with political conflict such as in Israel. Barber (2001) found similar results when he examined political violence, family, peer relations and poor neighbourhoods to see which related to behavioral disorder in Palestinian youth. Family, and peers were more related to disorder than exposure to on-going political violence (Barber, 2001). Ecological explanations of such links highlight the more likely encounters with disruptive youth in disadvantaged locations, with a higher likelihood of other YP being drawn into delinquent behaviour (Farrington, 1993; Gatti, 2005; T.E. Moffitt, Caspi, Dickson, Silva, & Stanton, 1996). Whilst the scale items for problem peer group cover issues of unpopularity and isolation, this was also associated with a trauma item on bullying victimisation which shows potential links between problem peer groups and stress, with another link to disorder risk.

7.3d Low self-esteem and disorder

Poor self-esteem is known to contribute to psychological disorder, (Antonia Bifulco & Thomas, n.d.; Fliege et al., 2009; Guillon, Crocq, & Bailey, 2003; Orth, Robins, & Roberts, 2008) and other problem behaviours (McGee & Williams, 2000; Trzesniewski et al., 2006). In this study, low self-esteem was associated with symptoms of PTSD but not with SDQ disorder. Low self-esteem proved to be the main risk factor for partial PTSD, with nearly a threefold higher rate of disorder in those with low self-esteem. This parallels known risk factors for developing PTSD (Adams & Boscarino, 2006; Catherall, 2011). Low self-esteem was unrelated to peer problems in this study so did not replicate the association with behaviour problems through peer rejection (Barnow, 2005). However, when a single item of bullying was examined, an association was found, suggesting that some aspects of negative peer experience were linked to poorer self-esteem. It was also unrelated to insecure attachment style. This is surprising given the links described in the research literature (eg Bartholomew & Horowitz, 1991). However, self-esteem was associated with childhood experience, with significant associations with affectionless control from either parent. However, it had no mediating role with childhood experience and disorder.

7.3e Insecure attachment style and disorder

Insecure attachment style was measured directly in this project as part of the Attachment Theory approach, and while some significant findings emerged, this was hampered by the fact that only half the sample completed this last part of the questionnaire. Rates of Secure style were consistent with other studies at 58% (M H van Ijzendoorn, Sagi, & Lambermon, 1999). However, there were too few YP with different types of insecure style to differentiate any definitive patterning, although dismissive style was the least common (7%). Although there was little raised rate of insecure attachment style among those with peer problems and no association with low self-esteem, a significant association emerged with father's affectionless control. There was also a significant relationship between insecure attachment style and Conduct disorder, but not with any other disorder thus failing to replicate findings in the research literature in relation to emotional

disorder (Antonia Bifulco & Thomas, n.d.; Cloitre, Stovall-McClough, Zorbas, & Charuvastra, 2008).

No significant link was found between partial PTSD and attachment insecurity in the current study. However there was a correlation with Re-experiencing symptoms alone. An association between insecure attachment style and PTSD criteria was expected (O'Connor & Elklit, 2008) particularly given both have links with childhood poor care and control. The expected link is through the related phenomenon of disassociation when exposed to a traumatic event (Nilsson et al., 2012) and through difficulties of emotion regulation arising from the failure to access support (Charuvastra & Cloitre, 2008) factors related to insecure style and disorder. The lack of any association in this data may be due to the small sample size and missing attachment questionnaire sections, or to the relatively low rate of full PTSD disorder, or the low rate of dismissive style associated with Avoidant criteria.

However, insecure attachment style related to material deprivation, this may be linked to worse parental care and stressed family life. However, no association was found with peer problems or self-esteem, despite the disorder associations. Therefore, in this analysis insecure attachment style did not relate in the expected manner to risk factors examined. However, this may be due to the low numbers completing the scale and so cannot give any definitive result for this variable.

7.3f Parental care in childhood and disorder

Whilst parental affectionless control was more evident in the cycling group (selected for family problems), it also occurred in the comparison group with a third of the young people reported early parenting problems and with 15% reporting 'affectionless control' from mothers and 19% from fathers. Eleven per cent had affectionless control from both parents. The fact that both parents were likely to show 'affectionless control' in many cases may link to the high level of stress factors reported, or to the expected association between poor partner

relationship and parenting (Cook, 2000). When combined parenting is poor this affects family attachment processes and mechanisms for intergenerational transmission of risk (van IJzendoorn & Bakermans-Kranenburg, 1996).

Having a low caring mother in childhood was associated with Any SDQ disorder and Conduct disorder, with high control from mother related to Hyperactive disorder. However, the combined affectionless-control from mothers was unrelated to any SDQ disorder. It is thus interesting that individual aspects of mother's care and control were related to behavioural rather than emotional disorder in this sample. In the research literature there is more focus on maternal parenting and emotional disorder (A Bifulco, 2010; Antonia Bifulco & Thomas, n.d.). This finding would need further research investigation in the Israeli context to see if a culturally-specific association can be replicated.

There was also a relationship of father's poor parenting on disorder. For example, having an affectionless controlling father was significantly related to Any SDQ disorder and to Hyperactive disorder, but with no significant relationship to Conduct disorder. The only mediating factor in this analysis was found in relation to father's parenting. Thus the relationship of father's affectionless control and Any SDQ disorder was partially mediated by peer problems. This is consistent with an Attachment theory approach. Prior research on the effects of poor parenting on disorder tends to focus predominantly on poor mothering with somewhat less known of the impact of poor fathering, particularly cross-culturally. However, Heaven (2004) noted that acting out behaviour in adolescents was related to having a father who was '*unreliable, unscrupulous, dishonest and irresponsible*' (page 183) (Heaven, Newbury, & Mak, 2004). In addition, there is other evidence of father's parenting style being more important for behavioural disorder (Barker et al., 2007; Dishion & Patterson, 1991) although the emphasis is usually more on conduct problems than ADHD. The association of controlling parenting and ADHD does however occur in the literature (Romano & Tremblay, 2006). This study, therefore, contributes to

evidence on the effects of poor fathering as well as poor mothering on adolescent disorder.

The fact that Emotional disorder did not emerge as linked to parenting variables as expected from the research literature is unclear. It maybe because rates were lower (but this did not preclude an association with Hyperactive disorder, or because such associations with emotional disorder are acknowledged in the research literature as more prevalent in girls who were little represented in this sample (I. Goodyer, Cooper, Vize, & Ashby, 1993; Hughes & Gullone, 2008; Zahn-Waxler & Slattery, 2000). This may mean that the numbers were insufficient to test out Emotional disorder hypotheses adequately.

Poor parenting is a known risk factor for developing PTSD (Meiser-Stedman, 2002; Otto et al., 2007; Trickey, Siddaway, Meiser-Stedman, Serpell, & Field, 2012). In this study, problem parenting was significantly related to PTSD criteria in correlational analyses. For example mothers' care and control was associated with Re-experiencing and Avoidance criteria. Fathers' care and control was associated with all the PTSD criteria and father's low care related to partial PTSD. Avoidance symptoms were related to all the parenting variables and this symptom is particularly important in terms of developing chronic PTSD as described earlier. Also, Avoidance was the symptom related to Conduct disorder in this sample, and one which did not improve with the intervention (Perkonigg et al., 2005). Thus, Avoidance may indicate more chronic disorder as suggestive in the literature, and shown in this sample to be comorbid but also with a strong influence of problem parenting in childhood of both parent. This may have also mitigated against decrease in Avoidance after the cycling intervention, both because of its possible chronic trajectory but also as a sign of greater early life developmental problems.

The quality of care from parents in childhood was also associated with peer problems and low self- esteem. In terms of Ecological interpretations, the stress experienced by the YP is also likely to be a common familial stress factor which

can impact on parenting (Catherall, 2011; Stern & Smith, 1995). It may also reflect possible parental disorder (Canetti et al., 1997). It is substantiated by research on family systems in both Israelis and Palestinians showing that chronic exposure to stress and conflict eroded family stability and increased disorder in adolescents including depression, anxiety and PTSD (Al-Krenawi, Graham, & Kanat-Maymon, 2009). These outcomes were the same regardless of ethnicity. Once again, personal rather than political context were more salient to psychological disorder outcomes, consistent with this study findings

Having a controlling father in childhood was more prevalent with young people who had experienced a traumatic event and among Arab youth. Indeed, 30% of the sample noted that both their parents were highly controlling, which may be partially explained by the political context. Given the heightened violent context in which these families live, particularly those in Arab communities, and higher rate of trauma in Arab YP having controlling parents may also denote high level of protectiveness for fear of harm. The PBI questionnaire asks to what degree does your parents act such as “Lets me go out as often as I want” or “ Is overprotective of me”. When placed into a context of on-going conflict, this level of control is understandable. However, the relationship between parental control, particularly affectionless control and disorder in this study, shows whilst this may have had benefits for physical safety, it was nevertheless related to psychological risk and disorder.

7.4 PTSD in a conflict zone

Reflecting on the reporting of Re-Experiencing and Hyper-vigilance in relation to trauma in this sample, an influence from the context of Arab and Israeli collective culture needs to be considered. Collective expression of emotion about trauma may amplify strategies of Re-experiencing and keeping the trauma in mind, rather than Avoidance of the trauma, or indeed processing trauma responses in a more adaptive way. In Arab and/or Muslim communities, a traumatic event that happens to someone in the community is felt collectively and there is substantial public display of emotion (Baker & Shalhoub-Kevorkian, 1999). Baker and

colleagues in their study of the Palestinian community explain how a single traumatic event is experienced by the entire community:

“When a family loses one of its members as a result of torture, gunfire, or battering at the hands of the Israelis, the entire community flocks to the home of the martyr (deceased) to share in the bereavement. Islamic teachings also dictate that the body of the martyr is buried in its natural state, adorned by the blood-soaked clothes, which are left on the deceased untouched. The corpse is carried in an open casket with the face exposed.....Hence the concepts of ‘numbness’ and ‘re-experiencing’ the trauma even are applicable not only at the individual level but also at the community” (pg 941)(Baker & Shalhoub-Kevorkian, 1999).

Whilst this shared pain may help people feel connected to their community, it can also create a *“collective sense of victimhood”* (Baker & Shalhoub-Kevorkian, 1999) and collective insecurity (Daniel Bar-Tal & Jacobson, 1998; Maoz et al., 2008) which might relate to failures in processing traumatic experience and a collective Re-experiencing. In the PTSD Reaction Index, ‘hearing about violent death or serious injury of loved one’ was the most common trauma reported by the YP in this sample. Moreover, ‘watching out for danger’ in Hyper-vigilance was found to occur frequently. This may be added to by collective insecurity and increased vigilance in the society as a whole which transmits to the young people.

7.5 Resilience

Resilience was considered a key theme in this study, since positive factors which might mitigate against adversity and disorder in the sample in the first phase would help to understand those factors which might be enhanced in the cycling intervention to decrease symptoms and increase wellbeing.

The young people had high rates of positive factors in their lives, including support, and pro-social behaviour— indeed 83% of the sample reported having a support figure, the most common being an adult they could go to for help, but with over two-thirds also able to go to a peer and with parents mentioned more

often in the comparison group. Similarly 88% of the sample showed pro-social behaviour significantly higher than UK groups. Overall, this suggests that the young people investigated had high rates of both adversity and positive experience. Having combinations of negative and positive experience has been argued to be a function of a more complex modern world whereby YP have a range of experiences from different aspects of their roles and community (A Bifulco, 2010). It can be argued that it is the presence of negative along with the absence of negative which creates the most deprived conditions (J Garbarino, 1997). Whilst the YP investigated had high rates of symptoms, these were not all at case levels. Therefore having disorder at subclinical/borderline level may itself be a function of greater resilience if it effectively suppresses clinical expression of disorder. Neither support nor pro social behaviour was effective in relating to low level of symptoms in the group studied in the first phase as might be expected from the research (Punamaki, Qouta S, & El-Sarraj, 2001; Stichick Betancourt & Tanveer Khan, 2008).

Cameron and colleagues' work on resilience in adolescents across different cultural contexts provides some insight into why this can be difficult to uncover (Cameron et al., 2007). Using a secure attachment perspective, they cautioned that attachment is temporally and developmentally changeable in adolescence. As an adolescent's environment broadens, resilience is affected by a process of reconciling issues such as justice, social identity, sense of community and a potential clash of family values with the wider culture as the adolescent becomes more independent (Cameron et al., 2007).

Israeli youth have complex and substantial issues to deal with in order to achieve resilience around identity particularly for the Arab population (Abu-Rayya & Abu-Rayya, 2009) and they must reconcile conflicting issues in the wider community. As this environment is unstable and insecure, this may make the process more difficult. This may show itself in the low self-esteem variable. It was therefore of interest that 30% of these high risk YP experienced wellbeing defined by very low symptom levels. Those with good pro-social skills had low

symptomatology even when they experienced poor care or control from parents indicative of resilience.

7.6 Effectiveness of the sports intervention

The analysis shows that the cycling program provided the YP with an opportunity to have fun, a diversion from the political insecurities, build self-esteem and have access to social support and role models. This can help build resilience (Alvord & Grados, 2005) by focusing attention outwardly during challenging times (Csikszentmihalyi, 1990). Immersion in an absorbing or pleasurable activity such as sports, provides an opportunity to escape from ruminating and thinking, to practice new skills, to avoid or forget negative feelings (Stinson, 1997). Learning to focus attention also develops good coping skills and these skills may mitigate the impact of trauma or negative events (Csikszentmihalyi, 1990). Physical exercise was also identified as a potential remedy for psychological symptoms, and improving health and wellbeing.

There was some limited evidence of improvement in those in the cycling group in terms of self-esteem, support, reduction in Conduct disorder and improvement in symptoms of PTSD, with reductions in Re-experiencing alone reaching significance levels in the group comparison. The lowering of symptoms is interpreted as due to a combination of the cycling activity leading to increased self-esteem, support and access to a role model. These may have had impacts on emotional-regulation which in turn led to lower Re-experiencing (Flack, Litz, Hsieh, Kaloupek, & Keane, 2000; Litz & Gray, 2002). Distraction elements in the cycling may also have had an effect on reducing re-experiencing symptoms.

As noted earlier the continuation of PTSD symptoms such as Avoidance may denote the chronic form of the disorder, potentially related to early problem parenting. Many of the risk factors linked to PTSD are present in these young people: poor parenting, low self-esteem and continued high rates of trauma and life events suggestive of a possible chronic course. 'Light touch' non-psychological interventions such as a cycling program, would not be expected to

deal with chronic PTSD conditions (Saxe, MacDonald, & Ellis, 2007). Such interventions may be more effective for helping those with symptoms post trauma who do not have conditions for chronic, or complex conditions (De Bellis & Van Dillen, 2005). Here increases in self-esteem and support may provide sufficient normalising and affect-regulating input to impede the development of the full clinical disorder.

In addition to psychological benefits, health benefits were described of the cycling program. YP in the focus groups indicated that the cycling program stopped them from smoking and drinking and wanting to be good athletes and able to compete, gave them a motive for adopting a healthy lifestyle. This is confirmed in research reviews on teenager's substance abuse and sports involvement (Lisha & Sussman, 2010). In this review, smoking, in particular, had immediate negative impacts on sport performance and therefore avoided. Alcohol use, on the other hand, had less immediate negative effects and was more commonly used, particularly with males involved in male dominated, school sponsored sports (Lisha & Sussman, 2010). These findings parallel longitudinal study of young people in the US which found a decrease in cigarette and moderate use of alcohol in those involved in team sports and exercise programs (Terry-McElrath, O'Malley, & Johnston, 2011). These benefits are also important as public health issues in YP.

These findings need to be pursued in a larger cohort of young people with sports intervention to see if further positive effects may have been masked by the small numbers in the present study. Currently, no RCT trials exist examining sports and PTSD as documented in the Cochrane review undertaken in parallel (Lawrence et al., 2010). There have, however been a small number of quasi-experimental studies on involvement in sports to alleviate PTSD and these have found a positive but weak link (Manger & Motta, 2005; Newman & Motta, 2007) consistent with that found here. Whilst it could be argued that an RCT would provide best evidence of the effectiveness of such intervention, whether RCTs are possible in conflict locations and whether the findings they would yield would

prove relevant evidence of efficacy given the extraordinary conditions which apply. There is thus increased practical opportunity for comparative general community designs.

7.6a Building self-esteem

After participating in the cycling program for nine months, the cyclists showed an increase in positive attributes such as support and decreased levels of low self-esteem, both critical for adolescent development. The importance of having, and maintaining, good self-esteem in adolescence is a critical element to well-being. Healthy self-esteem is shown to relate to lower participation in a range of problem behaviours and can be instrumental for good school performance, healthy relationships with peers (Dumont & Provost, 1999; Laible et al., 2004) and protect from mood disorders (Birndorf, Ryan, Auinger, & Aten, 2005; Brown, Andrews, & Harris, 1986; Owens, 1993).

It was self-esteem which improved most in the cycling group. This is consistent with a systematic review on physical activity and self-esteem in children and adolescents, which found that self-esteem increased for a period of time in children and youth who participated in exercise or sports programs (Ekeland et al., 2003). The relationship between increasing self-esteem and sports may in part lie in how physical activity improves beliefs in physical competence, which in turn improves perceptions of self (Boyd & Yin, 1997; Richman & Shaffer, 2000). Indeed the more a young person participated in a sport, the more competent they felt with a 'dose' effect in feelings of self-worth (Richman & Shaffer, 2000). Sports-related increase in self-esteem also reduces participation in risky health behaviours such as smoking and drinking leading to a positive feedback loop (Ferron et al., 1999). This linked to enjoyment and a sense of fun can draw YP in, encourage them to participate and then commit to physical activity (Cheung & Chow, 2010; Rowland, 1994).

7.6b Role of Support

The increase in social support experienced by the cyclists was also shown. This was due in part to the acquisition of a role model, which may be attributed to the cycling coach but also to other supportive figures. Providing a broader supportive

environment is one of the key roles of a coach in this cycling intervention. Other studies show YP with low self-esteem benefit from the supportive, encouraging role of a coach (Smith & Smoll, 1990). In this study the benefits extended to increased support outside of cycling, from parents and extended family.

For some the coach may have been seen as an alternate parent figure given the high numbers with poor parental care. But it is also possible that the cycling provided an opportunity for parents to show support for their children in encouraging their cycling activities. Many of the young people in the focus group mentioned how they needed to have parental support for participation. Perceived parental support is recognised as a key element for young people to continue to participate in physical activity outside of school (Boyd & Yin, 1997; Cheung & Chow, 2010; Eppright, Sanfacon, Beck, & Bradley, 1997; Hoyle & Leff, 1997; Motl, Dishman, Saunders, Dowda, & Pate, 2007; Zeijl, te Poel, du Bois-Reymond, Ravesloot, & Meulman, 2000). If parents believe their child has an aptitude for sport the young people are more willing to engage (Motl et al., 2007; Valois RF, Umstattd RM, Zullig JK, 2008) and a strong parental bond has been shown to influence participation in physical activity (Dzewaltowski, Ryan, & Rosenkranz, 2008). Moreover, parents who participate in physical activity themselves are more likely to have children who also participate in sports (Sallis, Prochaska, Taylor, Hill, & Geraci, 1999).

7.7 Study limitations

There were a number of limitations of the study described and the implications of these needs to be discussed. These will be dealt with in turn.

7.7a Sample selection

Selecting the sample proved difficult mostly around finding the YP particularly in the comparison group. Whilst the local research assistant with his experience and knowledge of the area allowed easier access to schools and community groups in the area, there were other obstacles with the result of smaller numbers than initially planned in phase 1, with numbers at follow-up at levels indicating the

analysis being under-powered. The ethnic composition was not representative of Israeli society with no Arab Moslems selected for study because of their low participation in the cycling intervention. Instead, only Druze moslems were included. Thus findings cannot be generalised to the bulk of the Israeli Arab population. Gender in-balance was another issue with too few girls in the cycling group to establish gender effects, expected to be prominent in this age group.

The high attrition rate at follow up was a major limitation to research conclusions about the efficacy of the cycling intervention. Whilst the possibility of bias due to those not being followed up having different profiles was largely discounted the problem was mainly one of statistical power. The high attrition rate means that the sample was reduced from 108 to 60 for phase 2 and the sample size identified as smaller than that required from the power calculation undertaken. Despite this, some significant effects were shown, but small sample sizes means that proportional differences are less robust and important associations may have been missed. Thus follow up data must be interpreted with caution and it is recommended that further research investigation is undertaken to extend the findings.

The instability of infrastructure in Israel during the data collection period was unexpected and impacted on the research process. Bus strikes impeded travel, a six month school strike during the time of comparison group data collection meant no access to schools. Social workers who were originally consigned to aid in the group selection and background material were also inconsistent due to work loads and other stressors and could not follow through on tasks. They finally avoided contact which affected the comparison group selection and phase 2 attrition rates. Such factors are difficult to avoid working in difficult locations, and these are amplified for small studies with limited resources. These constraints need to be carefully accounted for in designing such studies in future.

7.7b Cross sectional data

Another limitation relates to the cross-sectional nature of the study design at phase 1. Here associations between variables could readily be ascertained, but

with no direct evidence of their time order or direction of influence. Time order of variables in the analysis was imputed by their expected direction (eg peer problems to disorder) or by instruction (eg childhood factors reflected those in the past). However, there was no guarantee that this chronology applied and it could equally be concluded that disorder may have increased experience of risk factors and possible bias in reporting of childhood experience rather than vice versa. Neither direction of influence nor causality can be imputed with confidence. The mediation analysis is therefore only exploratory and cannot be used to determine causality.

7.7c Measurement restrictions

Whilst measurement approaches chosen were appropriate to the study and its location, limitations of such approaches need to be acknowledged. Self-report measures are open to the criticism of bias in reporting capturing only those aspects of which the respondent is aware rather than those that other people may observe, or that a skilled interviewer could deduce from detailed face-to-face questioning. There is thus, no opportunity for investigator-based judgement or observation when using questionnaires. This means that the findings need to be interpreted with caution until confirmed with more robust and triangulated measurement and in prospective studies. For all disorders, a clinical interview would ideally be required to confirm diagnoses. However, the choice of measurement was constrained by the particular characteristics of this study and its location including language issues.

Particular problems were encountered in the completion of the attachment style questionnaire (RQ), which was the last section on the questionnaire. Perhaps the importance of fully completing the questionnaire was not clearly enough emphasised by the local research assistant who helped translate and administer the questionnaires. However, it may also be that this particular attachment questionnaire did not translate well for this age group and culture, or that that vignette format was found to be more difficult than the other single-item Likert scales. Therefore alternative questionnaires need to be considered, and the ordering of the questionnaire more carefully devised.

In order to counteract some of the translational issues inherent with working across cultures it is advised to use a mixed methods approach, as these help to “illuminate and complement” quantitative findings in cross cultural research (Li, page 139)(Li, 2003). Using some qualitative methods was considered a strength of the project. However, the form of qualitative method was constrained by language issues. The choice of focus group for young people (rather than say interviews or observational methods) was a pragmatic one given issues of access and language barriers. Focus groups tend towards consensus and may have masked reporting of more unpopular less consensual views held by particular YP or of reporting negative experience of the cycling. Interviews are better at gathering information on sensitive and personal topics, such as feelings of safety and how the young person deals with stress. However, it was felt that focus groups were suitable for gathering data on cycling and leisure activities as this topic is relatively neutral, occurs with the group involved and the groups enthusiasm for the topic bolstered discussions. The interviews with the coaches confirmed the findings of the focus groups and were a good example of how triangulation can work to support evidence (Miles & Huberman, 1994). However, more depth of information from the young people individually, and this from both phases of the study, would have added to understanding of the cycling experience and may have highlighted important personal, developmental as well as cultural issues.

Whilst mixed measures are advocated, and the importance of bio-psycho-social models in child development acknowledged, it was impractical within the study to include any biological measures. One example would be to collect saliva to measure cortisol levels, and if an association was found between dys-regulated cortisol and disorder and if this changed as a result of the cycling intervention, then this would provide a culture-free assessment of change. Choosing a sports-based intervention could be argued to work directly on biological markers of risk through increase in exercise and physical strength and potentially physical

health. Future investigations should consider this aspect in study design, although there may be considerable barriers in cross-cultural settings.

7.8 Challenges of working in an ethno-political conflict zone

War impeded this research directly and indirectly. The conflict was sometimes overt but always ran like an undercurrent beneath all other issues. The major conflicts in June 2007 and December 2008 spun the country into chaos as Arab Israelis, mostly young, rebelled in the hundreds against the attacks. The direct impacts are potentially evident in the high rates of trauma (67% if bombing is included) and PTSD symptoms. The indirect effects affected day-to-day working on the project. For example the sponsors of the cycling group were involved in organising emergency shelters for families, other associated professionals were similarly distracted, and these efforts were given higher priority to the cycling programs and aiding the research activity as might be expected.

Under such pressure, stress was often evident. For example, the deep division between Arabs and Jews was revealed in a research meeting with the local researcher and sponsor organisation where an argument broke out over the words used to describe the conflict in the research and any implication of bias towards Arab or Jewish groups. This is also observed in the research literature (Maoz et al., 2008). As an outsider such language distinctions needed to be carefully navigated when investigating adolescent experience across the ethnic divide.

One of the insights during this research project was to work through the potential relationship of culture to psychological expression and the pathway to understanding PTSD symptomatology. For example parallels could be seen between Hyper-vigilance or Re-experiencing symptoms and political and social pressures to keep any experience of conflict highly visible in the media and a constant source of discussion and potential amplification. The relationship between media representation of the conflict and personal strategies for dealing with trauma emanating from political conflict would be a useful area of further research.

Another issue concerns cultural issues in examining risk factors such as attachment style. Attachment Theory has been subjected to criticisms of being Eurocentric and focusing on particular types of child rearing practice in small nuclear families (Robinson, 1998). However, extensive cross cultural study by van Ijzendoorn and others have shown some consistency across culture including Israel, particularly in Secure attachment rates (M H van Ijzendoorn et al., 1999). Israel itself is a centre of research on attachment, both in its investigation of the children of Kibbutzim (Sagi et al., 1995) and multiple caregivers in childhood (M H van Ijzendoorn et al., 1992) and in the development of stress and attachment relationships by Mikulincer and colleagues (M Mikulincer et al., 1999). Rates of secure attachment style shown in this study were consistent with those shown in other adolescent samples internationally (M H van Ijzendoorn et al., 1999). Including a cultural interpretation adds to the complex layering which already occurs in understanding psychological disorders.

7.9 Observations on Working in a different culture

When working in a different culture, it is important to consider how local social conditions may influence child development potentially differently from that expected from Western norms. Observations on applying psychological investigation cross-culturally is critiqued as under-estimating social and cultural influences (Ratner & Hui, 2003). They write:

“Psychologists’ ignorance is not simply due to the vastness and complexity of cultural information which might escape the most diligent researcher. It is due to an entrenched blindness to crucial social issues.”
(pg74)(Ratner & Hui, 2003)

For this reason the study approach was equally weighted to both social and psychological approaches to investigating a psychological outcome of disorder in YP. This could however have been extended with further resourcing to examine the effect of political violence and trauma on family functioning by also including parental assessments. As with all similar research, the results need to be viewed

from the lens provided which examined risk and resilience from a particular place and time with a particular age group. It was always the intention to set this project in a different culture, particularly one in conflict, in order to experience research working cross-culturally and to examine adolescent mental health including trauma responses in more extreme contexts. The challenges were always recognised. It was understood that the project would involve working with a different culture, with a strong collective identity forged in political and ethnic/religious identity that has an extensive and elaborate history. To come to this as an outsider with no ethnic or religious links to the culture may have influenced the research process and conclusions reached. However, the findings that emerged did indeed point to similar patterns of risk and disorder to that found in studies of adolescents internationally and therefore showed the importance of developmental approaches even in extreme conditions.

In terms of research logistics, the feasibility of running the study required help locally. This involved finding a research assistant in Israel who spoke Arabic, Hebrew, and English, worked well with young people, had research experience, and whose salary could be funded by the One to One sponsors who provided the cycling groups. Knowing the three languages well was absolutely essential for working with these young people as well as the principal investigator, so that all would feel comfortable expressing themselves. Language is the chief means by which we express our thoughts, feelings and beliefs and not knowing the language through which one is hoping to understand someone else's thoughts feelings and beliefs was understood to be a barrier. The choice of researcher was an Arab, Christian male, older than the principal investigator from whom he had to take direction. Taking directions from younger (foreign) females is something that is not commonly done in the society and is not comfortable for Arab males. This issue could have affected the implementation of the research project. However, no discomfort was voiced and the principal investigator (PI) made considerable effort to be respectful as well as authoritative while keeping the research project on track. However, better personal knowledge of local conditions and networks by the PI may have avoided the high attrition rate.

In terms of translating the questionnaires, every effort was made to identify previously translated questionnaires that had been used in Israel before. However, some translation was still necessary, for instance the Parental Bonding Instrument. During the translation process, some concepts were discovered that did not translate well from English. The translation of concepts that do not readily appear in other languages is a known challenge when working cross culturally (Sullivan & Rocco Cottone, 2010). For example, in the PBI, the item of 'parent being cold' did not translate well and had to be worked several times until the back-translation was adequate. Similarly the item 'losing my temper' had to be refined. Finally, the questionnaire was back-translated from Arabic and Hebrew into English and gave satisfactory results. However, somewhat low internal reliability of father care and control scales may have been affected by this.

The focus groups were conducted in either Hebrew or Arabic depending upon the group. This necessitated the transcribing and translation by the RA and his colleagues. It was at this juncture where meaning and depth were at risk of being lost to the principal investigator doing the analysis who did not understand the verbal answers and nuanced emotion expressed. Instead, an English transcript of the focus groups was created to work from which might have lacked some of the subtlety required.

However, the issues of language sensitivities are also common within Israel. For example, a situation arose during one focus group where some of the boys felt pressure to speak Hebrew as it was considered the dominant language, even though they did not feel comfortable speaking Hebrew. The local researcher reassured them that they could speak Arabic if that was what they wanted, and this is where his language skills proved additionally important. These types of political related issues ran like a current throughout the project sometimes making an impact, sometimes just being the background hum to it.

7.10 Contribution to Knowledge

This study was innovative in utilising an Ecological and Attachment framework to understand the interrelationship of risk, disorder and resilience factors in a group of high risk Israeli adolescents. This approach aimed to examine the many facets that influence adolescent mental health in conflict settings. Elements of both frameworks were supported with peer problems, self-esteem, deprivation and trauma all having associations with disorder outcomes. Many research approaches favour one or other approach but combining the two allows for an equal weight to be placed on social adversity and the psychological effects of early life parenting. Exploring these associations were strengths of the study. Similarly examining a range of disorders allowed for a fuller examination of the different effects of the risk factors. While PTSD was an important focus of the study and a reason for choosing the location of study, and the intervention, additional important findings arose from looking at the behavioural disorders of Hyperactive and Conduct disorder in relation to peer problems and childhood experience.

The project used a prospective approach to evaluate a cycling program in relation to alleviating risks and disorder. Some positive effects were found, including improvement of self-esteem, support, conduct disorder and PTSD Re-experiencing symptoms in the cycling group. However, low numbers resulting from high attrition, and lack of matching between the groups meant that a fuller test of the intervention impact is needed. Nevertheless this project was one of the first of its kind to systematically evaluate a community sports project aimed at improving adolescent mental health in a difficult research setting on PTSD and other disorder and requires further investigation in similar groups.

The study is able to make some observations, reflections and recommendations for researchers working in this area.

First, researchers in PTSD should consider a fuller list of trauma events in encompassing disorder in studies not tied to a particular disaster experience. In

conflict zones extending the trauma event list to include bombing experience and other elements of political violence may increase the prevalence rate. Such trauma was as common in this sample as the personal trauma identified in the clinical symptom scales, and if excluded would have accounted for lower traumatic symptom counts.

Secondly, non-governmental organizations who fund and facilitate sports and games projects for young people, should consider routinely building in a pre- and post-test questionnaire to detect changes in both risk and positive factors as a result of the intervention, including self-esteem, social support and disorder symptoms. Institutional capacity for analysing such data should be taken into account before collection. This would allow for valuable self-assessment information to be collected and analysed.

Thirdly, the acknowledgement on a systems level that community programs such as those involving sports allow for important avenues of intervention and preventative action for high-risk families to function normally needs to be extended to conflict zones (Little & Mount, 1999). Examining adolescent psychological symptomatology into the realm of public health intervention potentially frees up the demands on clinicians in mental health teams to enable valuable early intervention to occur. In conflict zones, this is likely to be an economical alternative with potentially large benefits.

Fourthly, for researchers wanting to undertake research cross-culturally, it is advisable to work a 'cultural broker' to facilitate the research process adapting projects to cultural restraints, incorporating cultural sensitivity in research design. This aids with research logistics and can help with interpreting results.

Extending this research in a larger follow-up study would both confirm and extend findings. While this could potentially be done using the same cycling groups, but perhaps focus on boys alone, it could also use other activities or types of sport more inclusive of girls, to definitively state that involvement in a sports program can ameliorate psychosocial risk and SDQ and PTSD disorder.

The ground work for such an extended study is provided by the one reported here with its findings suggestive that involvement in a sports program does indeed have some merit for improving adolescent mental health. In general more such studies are needed.

The experience of working and living in Israel to conduct this research project led to a personally greater understanding of how to undertake research in a conflict zone as well as greater understanding of the importance and complexity of Middle East peace initiatives and interventions for YP. Part of Israeli life seems to tolerate insecurity and danger, with admonishments to the population to swallow fear, and live life as best as you can. The overriding impression from studying Israeli youth was that there was much positive experience blended with the negative, and interventions such as the cycling an optimistic attempt to provide opportunities for YP and families to thrive in difficult circumstances. It is hoped that these interventions continue and that the findings reported here encourage the extension of such programmes to aid with the better adjustment of YP living in such difficult contexts.

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Appendix 1:

Questionnaire Phase 1 and Phase 2

RIDING IN THE RIGHT DIRECTION
A PROJECT WITH YOUNG PEOPLE¹²

Id1.

Questionnaire 1 ABOUT ME



This questionnaire is the first part of a research project about young people and how they feel about their families, friends, their emotional health and if they've been exposed to a bad event. Please try to answer all the following questions about yourself and your feelings. All your replies will be treated in confidence. Nobody will see them apart from the researcher who will collect the questionnaires.



ME AND MY LIFE

I1. My initials _____

I2. My birthdate is _____
day month year

1. I am (Please circle)

- a. Male
- b. Female

2. My age is _____

My religion is: : (Please circle)

3. Jewish Muslim Christian Druze Other (describe.....)

¹² Sue Lawrence, Royal Holloway, University of London, in partnership with One2one charity.

My Household



Please circle the correct answer:

4. Does your mother live with you? Yes / No
5. Does your mother work? Yes / No
6. If yes, what work does she do? (describe) _____
7. Does your father live with you? Yes / No
8. Does your father work? Yes / No
9. What work does he do? (describe) _____
10. How many rooms are in your house? _____
11. Do you share your bedroom with anyone? Yes / No
If yes how many in your room? _____
12. How many people in your home have a mobile phone? _____
13. How many televisions in your home? _____
14. How many computers in your home? _____

My Strengths and Difficulties



For each item please mark with a tick (✓) one box for 'Not True, Somewhat True or Certainly True' to describe yourself. It would help if you answer all the items the best you can even if you are not absolutely certain. Please give your answer for how things have been over the last 6 months.

My Strengths and difficulties	Not True	Somewhat True	Certainly True
15. I try to be nice to other people, I care about their feelings			
16. I am restless, I cannot stay still for long			
17. I get a lot of headaches, stomach-aches or sickness			
18. I usually share with others (food, games, pens etc.)			
19. I get very angry and often lose my temper			
20. I am usually on my own, I generally play along or keep to myself			

My Strengths and difficulties (cont.)	Not True	Somewhat True	Certainly True
21. I usually do as I am told			
22. I worry a lot			
23. I am helpful if someone is hurt, upset or feeling ill			
24. I am constantly fidgeting or squirming			
25. I have one good friend or more			
26. I fight a lot. I can make other people do what I want			
27. I am often unhappy, down-hearted or tearful			
28. Other people my age generally like me			
29. I am easily distracted, I find it difficult to concentrate			
30. I am nervous in new situations. I easily lose confidence			
31. I am kind to younger children			
32. I am often accused of lying or cheating			
33. Other children or young people pick on me or bully me			
34. I often volunteer to help others (parents, teachers, children)			
35. I think before I do things			
36. I take things that are not mine from home school or elsewhere			
37. I get on better with adults than with people my own age			
38. I have many fears, I am easily scared			
39. I finish the work I'm doing. My attention is good.			



MY FEELINGS ABOUT MYSELF

A number of statements are listed below. Please read each one carefully and then tick the box (✓) to indicate . to what extent you agree or disagree.

MYSELF	Strongly agree	Agree	Disagree	Strongly Disagree
40. I feel that I'm a person at least on an equal plane with others				
41. I feel I have a number of good qualities				
42. All in all, I am inclined to feel that I'm a failure				

MYSELF (cont..)	Strongly agree	Agree	Disagree	Strongly Disagree
43. I am able to do things as well as most people.				
44. I feel I do not have much to be proud of.				
45. I take a positive attitude towards myself				
46. On the whole, I am satisfied with myself.				
47. I wish I could have more respect for myself				
48. I certainly feel useless at times				
49. At times I think I am no good at all				



Have bad things happened to you?

Below is a list of very scary, dangerous or violent things that sometimes happen to people. These are times where someone was HURT VERY BADLY OR KILLED, or could have been. Some people have had these experiences; some people have not had these experiences. Can you answer if the violent things happened to you, or if it did not happen to you¹³.

FOR EACH QUESTION: Check "Yes" if this scary thing HAPPENED TO YOU
Check "No" if it DID NOT HAPPEN TO YOU

50. Being in an bad accident, like a serious car accident	Yes	No
51. Being hit, punched, or kicked very hard at home. (DO NOT INCLUDE ordinary fights between brothers & sisters)	Yes	No
52. Being beaten up, shot at or threatened to be hurt badly in your town.	Yes	No
53. Seeing a dead body in your town (do not include funerals)	Yes	No
54. Seeing someone in your town being beaten up, shot at or killed.	Yes	No
55. Having an adult or someone much older touch your private sexual body parts when you did not want them to	Yes	No

56. Hearing about the violent death or serious injury of a loved one.	Yes	No
-----------------------------------------------------------------------	-----	----

Mark if you experienced any bombings or have been close to any explosions or terrorist or military action:



	Circle one:		If yes, how many times? Eg. 1 or 2 etc
57. I was at the place of a bombing	No	Yes	___ times
58. I was near the location of a bombing	No	Yes	___ times
59. I was present during a bombing but not injured	No	Yes	___ times
60. Someone close to me was hurt in a bombing	No	Yes	___ times
61. I lost someone close in a bombing	No	Yes	___ times
62. I was present at a bombing and was injured	No	Yes	___ times

IF YOU HAVE ANSWERED 'NO' TO POINTS ABOVE (50-62) THEN GO TO NEXT SECTION OVERLEAF (YOUR FEELINGS ABOUT UPSETTING EVENTS)

IF YOU ANSWERED 'YES' TO ONE OF POINTS ABOVE (50-62) THEN PLEASE ANSWER POINTS 63-68 in addition

In the following questions please relate to your feelings and reactions during the bombings you were personally involved in.

Please circle Yes or No:

63. Were you afraid you would die?	Yes	No
64. Were you afraid you would be physically hurt?	Yes	No
65. Were you afraid that someone in your family was dead or hurt?	Yes	No
66. Were you afraid that someone in your family was physically hurt?	Yes	No
67. Did you think a good friend was dead or going to die?	Yes	No
68. Did you think a good friend was physically hurt?	Yes	No



Your feelings about upsetting events

Below is list of reactions that tend to appear in people following upsetting events. When answering the questions think specifically about your reactions to any conflict that you have experienced, including any witnessing of bombings or terrorist or military activity. If this has not happened to you or people close to you directly, then answer in terms of how you feel about the difficult situation currently happening in your country.

Tick (✓) how often the problem or feeling below has happened DURING THE PAST MONTH. Please be sure to answer all questions.

		Not at all/none	Some of the Time	Fairly often	Very often/much	All of the time/most
69.	I Watch out for danger or things I'm afraid of.					
70.	I get upset, afraid, or sad when something makes me think about the bad things that happen.					
71.	I have upsetting thoughts, or images of the bad things happening which come to mind when I don't want them too.					
72.	I feel grouchy, or I am easily angered.					
73.	I have dreams about bad things that have happened or other bad dreams.					
74.	I act or feel like the bad experience is happening all over again.					
75.	I have much less interest in doing things, (like being with friends, sports, or school activities).					
76.	I feel alone inside and not as close to other people as I used to.					
77.	I try not to talk about, think, or have feelings about bad things that have happened.					
78.	I have trouble feeling happiness or love.					
79.	I have trouble feeling sadness or anger.					
80.	I feel jumpy or easily startled, when I hear a loud noise or when something					

	surprises me.					
		Not at all/none	Some of the Time	Fairly often	Very often/much	All of the time/most
81.	I have trouble going to sleep, or I wake up often during the night.					
82.	I think that some part of the bad things that happen is my fault.					
83.	I have trouble remembering important parts of bad things that have happened.					
84.	I have trouble concentrating or paying attention.					
85.	I try and stay away from people, places, or things that make me remember bad things that have happened.					
86.	I have strong feelings in my body when something reminds me of bad things that have happened(for example: my heart beats fast, my head aches or my stomach aches).					
87.	I think that I will not live a long life.					
88.	I have arguments or physical fights.					
89.	I feel pessimistic or negative about my future.					
90.	I am afraid that the bad things will happen again.					

This is the end of questionnaire 1.
Your answers are confidential, your name will not appear on the questionnaire.

Thank you for your help with this research!



If you want to make any comment, then please write below:

RIDING IN THE RIGHT DIRECTION
A PROJECT WITH YOUNG PEOPLE¹⁴

Id2.

Questionnaire 2

MY FRIENDS AND FAMILY



Please can you try to answer all the following questions about yourself, your parents and your friends. All your answers will be treated with confidence. Nobody will see the answers apart from the researcher who will collect them at the end of the session. Your name is not on the questionnaire.



I3. My initials _____

I4. My birthdate is _____
day month year

91. I am (Please circle)

- a. Male
- b. Female

92. My age is _____

My religion is: : (Please circle)

93. Jewish Muslim Christian Druze Other (describe.....)

ABOUT MY FAMILY

Who lives with you in your home?

(Underline the individuals who live with you at home):

94. Mother/ stepmother/ other mother figure

95. Father/ stepfather/ other father figure

96. How many brothers at home? _____

97. How many sisters at home? _____

¹⁴ Sue Lawrence, Royal Holloway, University of London, in partnership with One2one charity.

98. Other people in your home? (Please describe eg. Grandmother, aunty, uncle) _____

HOW I GET ON WITH MY PARENTS



This questionnaire lists various attitudes and behaviours of mothers. Think about your MOTHER or your MOTHER FIGURE who looks after you, and place a tick (✓) in the most appropriate box next to each statement.

MY MOTHER	Very like	Moderately like	Moderately unlike	Very unlike
99. Speaks to me with a warm and friendly voice				
100. Does not help me as much as I need				
101. Lets me do those things I like doing				
102. Seems emotionally cold to me				
103. Appears to understand my problems and worries				
104. Is affectionate to me				
105. Likes me to make my own decisions				
106. Does not want me to grow up				
107. Tries to control everything I do				
108. Invades my privacy				
109. Enjoys talking things over with me				
110. Frequently smiles at me				
111. Tends to baby me				
112. Does not seem to understand what I want or need				
113. Lets me decide things for myself				
114. Makes me feel I am not wanted				
MY MOTHER (cont..)	Very like	Moderately like	Moderately unlike	Very unlike

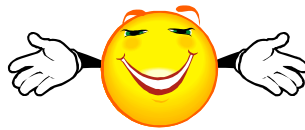
115. Can make me feel better when I am upset				
116. Does not talk to me very much				
117. Tries to make me dependent on her				
118. Feels I cannot look after myself unless she is around				
119. Gives me as much freedom as I want				
120. Lets me go out as often as I want				
121. Is overprotective of me				
122. Does not praise me				
123. Lets me dress in any way I please				

This questionnaire lists various attitudes and behaviours of fathers. Think about your FATHER or FATHER FIGURE who looks after you, and place a tick (✓) in the most appropriate box next to each statement.

MY FATHER	Very like	Moderately like	Moderately unlike	Very unlike
124. Speaks to me with a warm and friendly voice				
125. Does not help me as much as I need				
126. Lets me do those things I like doing				
127. Seems emotionally cold to me				
128. Appears to understand my problems and worries				
129. Is affectionate to me				
130. Likes me to make my own decisions				
131. Does not want me to grow up				
132. Tries to control everything I do				
133. Invades my privacy				
134. Enjoys talking things over with me				
135. Frequently smiles at me				
136. Tends to baby me				
137. Does not seem to understand				

what I want or need				
MY FATHER (cont..)	Very like	Moderately like	Moderately unlike	Very unlike
138. Lets me decide things for myself				
139. Makes me feel I am not wanted				
140. Can make me feel better when I am upset				
141. Does not talk to me very much				
142. Tries to make me dependent on her				
143. Feels I cannot look after myself unless she is around				
144. Gives me as much freedom as I want				
145. Lets me go out as often as I want				
146. Is overprotective of me				
147. Does not praise me				
148. Lets me dress in any way I please				

3. MY CLOSE RELATIONSHIPS



149. Are there any **ADULTS** you can go to with your problems or to discuss your feelings? **YES/ NO**

150. IF YES: Who are they?

(Circle more than one if relevant)

1. Mother/ mother figure
2. Father/ father figure
3. Other relative
4. Family friend
5. Teacher, rabbi, sheikh, priest
7. Coach
6. Other (describe).....

151. Is there an **ADULT** that is a good role model for you? i.e. encourages, supports and inspires you? **YES/NO**

152. IF YES: Who are your role models?

(Circle more than one if relevant)

1. Mother/ mother figure
2. Father/ father figure
3. Other relative
4. Family friend
5. Teacher, rabbi, mullah
6. Coach
7. Other (describe).....



153. Are there **TEENAGERS** your age that you can discuss your problems and feelings with? **YES/NO**

154. IF YES: Who are they?

(Circle more than one if relevant)

1. Sister
2. Brother
3. Other relative
4. Close friend
5. Other less close friend(s)
6. Other person (describe).....

155. Who would you describe as the **TWO CLOSEST** people to you?

(Circle up to two)

1. Mother/ mother figure
2. Father/ father figure
3. Sister or brother
4. Other relative
5. Family friend (adult)
6. Friend your age
7. Other (describe).....

4. MY RELATIONSHIP STYLE



Below are descriptions of four general relationship styles that people often report. Rate each according to the extent to which you think each description corresponds to your general relationship style. After each statement, **CIRCLE** the number which best describes you. Then at the end show which style is most like you.

156.

STYLE A

It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others accept me.

Not at all like me

1 2 3 4 5 6 7

Very much like me

157.

STYLE B

I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others.

Not at all like me

1 2 3 4 5 6 7

Very much like me

158.

STYLE C

I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them.

Not at all like me

1 2 3 4 5 6 7

Very much like me

159.

STYLE D

I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.

Not at all like me

1 2 3 4 5 6 7

Very much like me

160. THE STYLE MOST LIKE ME IS:

A B C D

This is the end of the questionnaire. Your answers are confidential and your name will not appear on the questionnaire.

Thank you for your help with this research!



If you would like to make any comment, please write below:

.

RIDING IN THE RIGHT DIRECTION
A PROJECT WITH YOUNG PEOPLE¹⁵

Id1.

Questionnaire 2 ABOUT ME

This questionnaire is the second part of a research project about young people and how they feel about their families, friends, their emotional health and if they've been exposed to a bad event. Please try to answer all the following questions about yourself and your feelings. All your replies will be treated in confidence. Nobody will see them apart from the researcher who will collect the questionnaires.

ME AND MY LIFE

I1. My initials _____

I2. My birthdate is _____
day month year

1. I am (Please circle)

a. Male

b. Female

2. My age is _____

My religion is : (Please circle)

3. Jewish Muslim Christian Druze Other (describe.....)

¹⁵ Sue Lawrence, Royal Holloway, University of London, in partnership with One2one charity.



My Strengths and Difficulties

For each item please mark with a tick (✓) one box for 'Not True, Somewhat True or Certainly True' to describe yourself. It would help if you answer all the items the best you can even if you are not absolutely certain. Please give your answer for how things have been over the last 6 months.

My Strengths and difficulties	Not True	Somewhat True	Certainly True
4. I try to be nice to other people, I care about their feelings			
5. I am restless, I cannot stay still for long			
6. I get a lot of headaches, stomach-aches or sickness			
7. I usually share with others (food, games, pens etc.)			
8. I get very angry and often lose my temper			
9. I am usually on my own, I generally play along or keep to myself			
10. I usually do as I am told			
11. I worry a lot			
12. I am helpful if someone is hurt, upset or feeling ill			
13. I am constantly fidgeting or squirming			
14. I have one good friend or more			
15. I fight a lot. I can make other people do what I want			
16. I am often unhappy, down-hearted or tearful			
17. Other people my age generally like me			
18. I am easily distracted, I find it difficult to concentrate			
19. I am nervous in new situations. I easily lose confidence			
20. I am kind to younger children			
21. I am often accused of lying or cheating			
22. Other children or young people pick on me or bully me			
23. I often volunteer to help others (parents, teachers, children)			
24. I think before I do things			
25. I take things that are not mine from home school or elsewhere			
26. I get on better with adults than with people my own age			
27. I have many fears, I am easily scared			
28. I finish the work I'm doing. My attention is good.			

MY FEELINGS ABOUT MYSELF

A number of statements are listed below. Please read each one carefully and then tick the box (✓) to indicate to what extent you agree or disagree.

MYSELF	Strongly agree	Agree	Disagree	Strongly Disagree
29. I feel that I'm a person at least on an equal plane with others				
30. I feel I have a number of good qualities				
31. All in all, I am inclined to feel that I'm a failure				
32. I am able to do things as well as most people.				
33. I feel I do not have much to be proud of.				
34. I take a positive attitude towards myself				
35. On the whole, I am satisfied with myself.				
36. I wish I could have more respect for myself				
37. I certainly feel useless at times				
38. At times I think I am no good at all				



Have bad things happened to you?

Below is a list of very scary, dangerous or violent things that sometimes happen to people. These are times where someone was **HURT VERY BADLY OR KILLED**, or could have been. Some people have had these experiences; some people have not had these experiences. Can you answer if the violent things happened to you, or if it did not happen to you¹⁶.

FOR EACH QUESTION: Check "Yes" if this scary thing HAPPENED TO YOU

Check "No" if it DID NOT HAPPEN TO YOU

39. Being in an bad accident, like a serious car accident	Yes	No
40. Being hit, punched, or kicked very hard at home. (DO NOT INCLUDE ordinary fights between brothers & sisters)	Yes	No
41. Being beaten up, shot at or threatened to be hurt badly in your town.	Yes	No
42. Seeing a dead body in your town (do not include funerals)	Yes	No
43. Seeing someone in your town being beaten up, shot at or killed.	Yes	No
44. Having an adult or someone much older touch your private sexual body parts when you did not want them to	Yes	No
45. Hearing about the violent death or serious injury of a loved one.	Yes	No

Your feelings about upsetting events

Below is list of reactions that tend to appear in people following upsetting events. When answering the questions think specifically about your reactions to any conflict that you have experienced, including any witnessing of bombings or terrorist or military activity. If this has not happened to you or people close to you directly, then answer in terms of how you feel about the difficult situation currently happening in your country.

Tick (✓) how often the problem or feeling below has happened DURING THE PAST MONTH. Please be sure to answer all questions.

		Not at all/none	Some of the Time	Fairly often	Very often/much	All of the time/most
46.	I Watch out for danger or things I'm afraid of.					
47.	I get upset, afraid, or sad when something makes me think about the bad things that happen.					
48.	I have upsetting thoughts, or images of the bad things happening which come to mind when I don't want them too.					

49.	I feel grouchy, or I am easily angered.					
50.	I have dreams about bad things that have happened or other bad dreams.					
51.	I act or feel like the bad experience is happening all over again.					
52.	I have much less interest in doing things, (like being with friends, sports, or school activities).					
53.	I feel alone inside and not as close to other people as I used to.					
54.	I try not to talk about, think, or have feelings about bad things that have happened.					
55.	I have trouble feeling happiness or love.					
56.	I have trouble feeling sadness or anger.					
57.	I feel jumpy or easily startled, when I hear a loud noise or when something surprises me.					
		Not at all/none	Some of the Time	Fairly often	Very often/much	All of the time/most
58.	I have trouble going to sleep, or I wake up often during the night.					
59.	I think that some part of the bad things that happen is my fault.					
60.	I have trouble remembering important parts of bad things that have happened.					
61.	I have trouble concentrating or paying attention.					
62.	I try and stay away from people, places, or things that make me remember bad things that have happened.					
63.	I have strong feelings in my body when something reminds me of bad things that have happened(for example: my heart beats fast, my head aches or my stomach aches).					
64.	I think that I will not live a long life.					
65.	I have arguments or physical fights.					

66.	I feel pessimistic or negative about my future.					
67.	I am afraid that the bad things will happen again.					

Other changes that have happened recently

Instructions: Here are some things that may happen in people's lives. Read each one and check a space, Yes or No, to show whether this happened for you .

DURING THE PAST SIX MONTHS Yes No

68. My family moved to a new home or apartment. _____

69. Somebody in my family had a serious illness. _____

70. My parents got separated or divorced. _____

71. I got disciplined or suspended from school. _____

72. My parents argued a lot. _____

73. Somebody in my family had a serious accident. _____

74. I had a lot of arguments with my parents. _____

75. My father/mother lost his/her job. _____

76. I had a serious illness. _____

77. I got a new stepfather/stepmother. _____

78. I broke up with my boy/girl friend. _____

79. I got bad grades in school. _____

80. I got into trouble with the police. _____

81. My parents had problems with money. _____

82. I had a serious accident. _____

83. I didn't get into a group or team that I wanted to be in. _____

84. I had trouble with my weight or physical appearance. _____

85. Someone in my family was arrested. _____

86. A new person joined our household (a child, a grandparent, stepbrother or sister, or other). _____

87. Some people that I used to be friends with don't pay attention to me anymore. _____

3. MY CLOSE RELATIONSHIPS



88. Are there any **ADULTS** you can go to with your problems or to discuss your feelings? **YES/ NO**
89. IF YES: Who are they?
(Circle more than one if relevant)
1. Mother/ mother figure
 2. Father/ father figure
 3. Other relative
 4. Family friend
 5. Teacher, rabbi, sheikh, priest
 7. Coach
 6. Other (describe).....
90. Is there an ADULT that is a good role model for you? i.e. encourages, supports and inspires you? YES/NO

91. IF YES: Who are your role models?

(Circle more than one if relevant)

1. Mother/ mother figure
2. Father/ father figure
3. Other relative
4. Family friend
5. Teacher, rabbi, mullah
6. Coach
7. Other (describe).....



92. Are there **TEENAGERS** your age that you can discuss your problems and feelings with? **YES/NO**

93. IF YES: Who are they?

(Circle more than one if relevant)

1. Sister
2. Brother
3. Other relative
4. Close friend
5. Other less close friend(s)
6. Other person (describe).....

94. Who would you describe as the **TWO CLOSEST** people to you?

(Circle up to two)

1. Mother/ mother figure
2. Father/ father figure
3. Sister or brother
4. Other relative
5. Family friend (adult)
6. Friend your age
7. Other (describe).....

LEISURE ACTIVITIES

95. Do you get involved in any after school or weekend activities?

Yes/No

96. What are your favourite leisure activities?

- a. sport

- b. music
- c. etc....

YOUR FEELINGS ABOUT THE CYCLING PROGRAMME

97. How long have you been in the cycling programme? _____

98. How many cycling sessions did you attend? _____

99. Did you enjoy the cycling programme?
a. Very much b Quite a lot c A bit d Not much

100. Were you dissatisfied with the cycling programme?
a. Very much b Quite a lot c A bit d Not much

101. What did you like best about being involved with the cycling program:
(Circle all that apply)

- A) The new friends that I made.....
- B) The coach made me feel good about myself.....
- C) Opportunity to ride a bike.....
- D) Being able to improve my cycling skills.....
- E) Competing in bicycle races.....
- F) It was fun.....

Please tell us what you liked about the cycling program:

102. What did you not like about the cycling program:
(Circle all that apply)

- A) I didn't like the other children.
- B) I didn't like the coach
- C) Cycling was difficult
- D) Other: Please

explain: _____

103. What would have improved your experience of the cycling?

This is the end of the questionnaire. Your answers are confidential and your name will not appear on the questionnaire.

Thank you for your help with this research!

If you would like to make any comment, please write below:

Appendix 2

Focus group questions

Tell us your name, your age and what you most enjoy doing when you're not in school.

- 1) Do you remember filling out a questionnaire for a research project? Many of you answered that you watch out for danger or things you're afraid of. We're curious to know what you mean by this...can you tell us about the things you watch out for?
- 2) Watching out for danger can cause you to not feel safe and this can be stressful. What kinds of things do you do to help with the stress?
- 3) Does participating in the cycling help to deal with stress?
- 4) What other benefits are there in doing the cycling?
- 5) Other than your parents, who do you go to if you're feeling scared or sad or need someone to talk to?
- 6) If they can't help, who is your next choice?
- 7) Most of you have said that you are happy with yourselves. What helps you to feel happy about yourself? i.e. getting on with your parents, doing something good at school, succeeding at sports or a hobby?

Summarise what they said then ask
Is this an adequate summary?

We wanted your thoughts and feelings about participating in sports.... Did we miss anything? Is there anything we haven't talked about but didn't?

Appendix 3

Coach Interview Guide

1. What do they see as the benefits of participating in the cycling?
2. What is their role as a coach?
3. Tell me about the children in cycling?
4. Do you think girls will become more involved?

Appendix 4

Ethics approval

Awarded January 2007 by Royal Holloway Ethics Committee
ROYAL HOLLOWAY
University of London

ETHICS COMMITTEE

This form which is **confidential**, should be completed in typescript or black ink and returned to Dr B Davis, Principal's Executive Officer, Principal's Office for any research project involving experiments/studies on human subjects which might give rise to ethical problems.

Before completing this form, applicants are requested to consult the Ethics Committee's Notes for Guidance. These are attached.

1. Title of Project: **Are we riding in the right direction?
Evaluating whether cycling interventions alleviate symptoms of emotional disorder in adolescents from different communities living in Northern Israel.**
2. Brief Outline of Project, including its proposed starting date, probable duration and where it is to be carried out: *Continue on a separate sheet if necessary*

..

The purpose of this study is to determine the psycho-social status of adolescents living in different communities (Arab and Jewish) in Northern Israel at a time after bombardment in 2006. All the young people studied will be involved in sports interventions offered by the One2One charity. The aim is first to examine the base-rate of emotional disorder in young people and then to examine whether involvement in these sport activities alleviates symptoms of anxiety (including PTSD) and depression. The study will specifically examine the level of support these children receive from parents, peers or sports coaches. Northern Israel has a mixed population of Jewish, Arab and Druze who live in middle to low income villages and members of the different communities will be included. The study will take place in Northern Galilee region and start May 2007 to January 2010.

Professor Bifulco is a grant holder for the One2one funders, with Sue Lawrence doing the data collection and analysis for a RHUL PhD. SL will move to Israel for the first period of data collection, but will be assisted by a researcher paid by One2one experienced in working with young people and who is both a Hebrew and Arab speaker. Professor Bifulco will be available for consultation throughout the project.

Further collaboration and support is provided by senior researchers in Child and Adolescent Clinical Services in Herzog Hospital, Jerusalem who are familiar with the groups and disorders to be studied and can advise on appropriate measures with standardized translations.

3. What is the intended purpose and intended benefit of the research?
The Committee will not be making a judgement as to whether the research is intrinsically worthwhile, but will rather take a view on the procedures employed in relation to the intended outcome

The intervention involves collecting information from adolescents (aged 12-14) in Northern Israel who participate in a weekly cycling program. The aim is to collect valuable base-rate information on children's emotional well-being as well as family and peer support networks. This as a preliminary to evaluating the cycling programme as an intervention for emotional disorder in adolescent groups who may have been affected by war conflict in 2006.

The results can inform the effectiveness of the ongoing cycling intervention as well as highlight need in this group of young people. The study will examine members of Arab, Druze and Jewish communities to look for relative deprivation and emotional problems in these groups, but also as an inclusive project to promote coexistence of these communities.

4. Outline of procedures to be used:

The study will be in 3 phases:

Phase 1 - will involve the collection of baseline data from 90 adolescents (age 11-14) living in the selected communities by means of questionnaire. The questionnaires have translations into Arabic or Hebrew and have been used in related studies in Israel. Analysis will examine issues of social deprivation, support and emotional problems in relation to the different communities.

Phase 2 – this will examine the effects of the cycling programmes with questionnaire measures provided at the beginning of the cycling involvement and at 6 months of regular attendance. The same questionnaires as used in Phase 1 will be given pre and post intervention. Each cycling group contains an average of 20 young people, who participate for a period of 8 months.

The aim is to take around 80 young people aged 12 to 14, but numbers will be reconsidered in the light of power calculations based on the phase 1 findings, and the numbers available at time of phase 2 study start.

Analysis will involve examining changes in scores over the 6 month period.

Phase 3 – Focus groups will be undertaken with 20 young people involved in the cycling interventions at the end of the 6 months involvement. The 20 young people will be divided into 2 groups of 10. The analysis will examine themes around cycling participation and support and whether the young people are aware of benefits of the

programme. Focus groups will also be conducted with the coaches to ask them their perceptions of how the cycling program helps the children. Focus groups will be conducted by the research assistant who speaks Hebrew and Arabic. The focus group will be recorded and transcribed.

Questionnaire measures are not yet finalised, but are likely to include:

- UCLA-PTSD Index for DSMIV-child version (Pynoos et al 1998)
- Functional Impairment questions from child Diagnostic Interview schedule (Lucas et al, 2001)
- Somatic Complaints from Diagnostic Positive Scale (Pat-Horencyk, 2005)
- Strengths and Difficulties Questionnaire (Goodman 1998)
- Rosenberg Self-Esteem (1965)
- Parental Bonding Instrument (Parker et al 1979)

Ethical permission will be obtained from the Ministry of Social Welfare and the Ministry of Education in Israel to conduct the research. All data will be stored anonymously and efforts will be made to lesson the burden of measurement by developing a single questionnaire schedule reducing overlap with a maximum of 45 minutes of participants time required. Transcribed and recorded data from interviews will be stored safely and disposed of appropriately once data analysis is complete. Information and consent forms will be provided for parents and adolescents and translated into Hebrew and Arabic as appropriate.

5. Are there potential hazards to participants in these procedures? NO

6. If 'YES'

What is their nature? (give full details)

What precautions will be taken to meet them?

7. May the procedures cause discomfort or distress? YES

8. If 'YES' what is their nature and extent?

It is possible that some of the young people may feel distressed at some of the questionnaire items concerning recent trauma experience or their own emotional disturbance. Support will be on hand from the Trauma Centre in Jerusalem to advise on services where necessary. The One2one coordinator Hedy Wax who will be involved in the

project is experienced in local service provision for children in the area and is an experienced social science researcher.

9. Where the procedures involve potential hazard and/or discomfort or distress, please state previous experience with this type of research:

Grant holder and supervisor Prof Bifulco is experienced in collecting information from high-risk adolescents and can provide support for Sue Lawrence in approaching the young people. Other support on hand will be from services and the charity funders as described above. The researcher to be employed by the charity has extensive experience of working with high risk young people in Israel.

10. Is electrical or electronic equipment to be connected to the subject? If 'YES' what steps have you taken to assure yourself of its safety? NO

11. How will participants be recruited? *If any recruiting material is used, please attach copies*

Participants in phase 1 will be recruited from villages in the area where the cycling programmes are being run. Various approaches will be tried to recruit, including contact through community organisations, advertising in local paper etc. (Recruitment advert shown in appendix 3). Those in Phase 2 and 3 will be from cycling programs already underway funded by the One2One charity.

12. How will the participant's consent be obtained? *Please attach handouts, briefing materials etc*

Parental permission will be gained prior to the research being undertaken plus participants will have the option not to participate. (See information and consent forms for parents and adolescents in appendices)

a) To what extent will he/she be briefed on the nature of the experiment/study before giving consent and in particular on the nature and level of any potential risk?

An explanation of the purpose of the study will be given to the participant and the parents. Information sheets will be translated into

Hebrew and Arabic to ensure parents and participants understand what the study entails.

b) How will it be made clear to the participant that he/she may withdraw from any particular aspect of the experiment/study at any time without giving any reason?

The children will be made aware that they do not have to participate in the study if they do not wish to and that they may withdraw at any stage. The consent forms will inform them that they may withdraw at any stage.

13. Will the participants be paid? NO

14. If 'YES' give details, including reasons for payment:

15. Are the services of the College Health Centre likely to be required for routine rest or recovery following an experiment/study? NO

16. Is any medically or dentally qualified person, or person qualified in first aid (other than the applicant) available in case of emergency? YES

Members of the cycling clubs and charity on hand for relevant support and assistance. SL is experienced at first aid and has extensive experience in sports training and injuries.

17. Please specify any financial or other interest to you or your department arising from the study:

None

18. Is the research already approved by, e.g. a hospital ethical committee? NO

19. Certain research instruments are not appended for the Committee's inspection but I am able to certify that they are widely-used, published, respected and not known to inflict harm: (*please initial, if appropriate*): AB. _____

20. Any other relevant matters (*on a separate sheet*)
SL is seeking insurance from RHUL to cover the duration of the field work.

Signature of Applicant: (name in block capitals):

Prof Antonia Bifulco

Signature of Supervisor: (name in block capitals):

Signature of Head of Department: Department:

Prof Paula Nicolson

Date:

Parent Information Sheet

**Research project: Riding in the right direction?
Sue Lawrence, Researcher, Royal Holloway, University of London
In partnership with One2One charity¹⁷**

Dear Parent,

I am a PhD student at Royal Holloway, University of London, UK undertaking a research project to look at support and emotional health in young people in Northern Israel. The research is partly funded by the charity One2One which runs youth projects in Northern Israel. Together, we would like to invite your child to participate in the study that will look at the emotional wellbeing of young people in your area.

The information which follows explains more about the project. It is important that you understand what it says so you can decide whether you want them to take part. Whether or not your child takes part, is entirely your choice and your child may withdraw at any time. Please ask any questions about the research and we will try our best to answer them.

This study will ask the children questions about:

- How they feel physically and emotionally
- How they feel about family and friends
- If they have been exposed to a traumatic event and has this affected them in any way.

All information collected will be stored anonymously and securely and kept entirely confidential. Participation in this study will not affect participation in the cycling program.

If you agree with your child participating in this study, please fill out the form attached and ask your child to return it to the researcher.

Contact information

If you want more information on the project, and are English speaking, you can contact me at 052 4738067.

You can also contact my research colleague, Samer who is Arabic and Hebrew speaking at 052 3946394. You may also want to contact Hedy Wax (0523 517 425) who coordinates One2One activities in Israel and speaks Hebrew.

Thank you for reading this information and considering helping us with this study.

Sue Lawrence

¹⁷ One to One, Carradine House, 237 Regents Park Road, London N3 3LF Registered Charity No: 801096

Royal Holloway, University of London

PARENTAL CONSENT FORM

Research project: Riding in the right direction?

I have read the information sheet, understand the nature of the research project and agree to my son/daughter participating.

My name _____

My son/daughter's name _____

I am aware that my child will be asked to fill in a questionnaire asking him/her about how she feels emotionally and physically and about family and friends and traumatic events. I am aware that my child's participation in this study will not affect their participation in the cycling program.

I am also aware that all the information collected will be anonymous and kept confidentially. My son/daughter may withdraw from the research at any point if they wish to.

Signed: _____

Date: _____

Information Sheet: Young person's

**Research project: Riding in the right direction?
Sue Lawrence, Researcher Royal Holloway, University of London
In partnership with One2One charity¹⁸**

I am a PhD student with Royal Holloway, University of London, UK undertaking a research project with young people in Northern Israel. We want to know about how young people feel about their families, friends, their emotional health and if they've been exposed to a traumatic event. The project is being run together with the charity One2One. They run after-school programs for children living in Northern Israel.

We will speak to some young people who are in the cycling clubs and some that are not to ask them about themselves. We would like to know whether being in the cycling clubs makes young people feel better about themselves.

This information sheet tells you about the project and what you will be asked if you get involved. It is important that you understand what it says so you can decide whether to take part. It is your choice if you want to participate and you can withdraw from the study at any time.

If you have any questions please ask the researcher who has given you this sheet and we will try our best to answer them.

The study will ask you questions about:

- How you feel physically and emotionally
- How you feel about the relationships you have with family and friends
- If you have been exposed to a traumatic event and how you feel about it.

We have already asked your parent for permission for you to be in the study. If you agree to participate then please fill out the form and return it to the researcher. You may withdraw from the study at any time.

Thank you for reading this information sheet and considering helping us with this study.

Sue Lawrence
Royal Holloway, University of London

¹⁸ One to One, Carradine House, 237 Regents Park Road, London N3 3LF Registered Charity No:801096

ADOLESCENT FORM
Riding in the right direction?

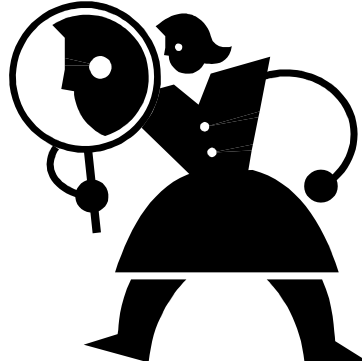
I (name) _____ wish to participate in the project

Riding in the Right direction?

Signed: _____

Date: _____

I am searching for answers.....



Help me in my research project to understand how teenagers living in Northern Israel feel about themselves, their parents, and the bombings in the North. I'm a student from the University of London in the United Kingdom and I need lots of volunteers to fill out a questionnaire.

The questionnaire will ask you about:

- How you feel emotionally and physically
- How you feel about your relationship with your parents and friends
- If you have been exposed to a traumatic event and how this may have affected you.

Before you can participate, you will have to ask your parents permission.

Your name and the information you give will remain confidential. You may withdraw from the study at any stage.

If you have questions, please call Samer, my assistant at 052 3946394.

Thank you very much for your help!

Sue Lawrence
PhD student
Royal Holloway, University of London
Israel # 052 473 8067

Are we cycling in the right direction? (used for Phase 2)



Help me in my research project to understand how participating in a cycling program helps teenagers who live in Northern Israel. I'm a student from the University of London in the United Kingdom and I need lots of volunteers to fill out a questionnaire.

The questionnaire will ask you about:

- How you feel emotionally and physically
- How you feel about your relationship with your parents, friends and coach
- If you have been exposed to a traumatic event and how this affected you.
- If you think the cycling program helps you in any way

Before you can participate, you will have to ask your parents permission.

Your name and the information you give will remain confidential. You may withdraw from the study at any stage.

If you have questions, please call Samer, my assistant at 052 3946394.

Thank you very much for your help!
Sue Lawrence
PhD student
Royal Holloway, University of London
Israel # 052 473 8067

Appendix 5

Sports and games for post-traumatic stress disorder

[Intervention Review]

Sports and games for post-traumatic stress disorder (PTSD)¹⁹

Sue Lawrence¹, Mary De Silva², Robert Henley³

¹c/o Lifespan Research Group, Royal Holloway, University of London, London, UK.

²Nutrition & Public Health Intervention Research Unit, London School of Hygiene & Tropical Medicine, London, UK. ³Center for Disaster and Military Psychiatry, University of Zurich, Zurich, Switzerland

Contact address: Sue Lawrence, c/o Lifespan Research Group, Royal Holloway, University of London, 11 Bedford Square, London, WC1B 3RF, UK.

sue.lawrence@lshtm.ac.uk. lawsue@googlemail.com.

Editorial group: [Cochrane Depression, Anxiety and Neurosis Group](#).

Publication status and date: New, published in Issue 1, 2010.

Review content assessed as up-to-date: 15 June 2008.

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Abstract

Background

Traumatic experiences evoke emotions such as fear, anxiety and distress and may encourage avoidance of similar situations in the future. For a proportion of those exposed to a traumatic event, this emotional reaction becomes uncontrollable and can develop into Post Traumatic Stress Disorder (PTSD) ([Breslau 2001](#)). Most of those diagnosed with PTSD fully recover while a small proportion develop a chronic PTSD a year after the event ([First 2004](#)). Sports and games may be able to alleviate symptoms of PTSD.

Objectives

Primary objective:

1. To assess the effectiveness of sports, and games in alleviating and/or diminishing the symptoms of PTSD when compared to usual care or other interventions.

¹⁹ Please contact author for PDF of review

Secondary objective:

2. To assess the effectiveness of different types of sports and games in alleviating and/or diminishing symptoms of PTSD.

Search strategy

The Cochrane Collaboration Depression, Anxiety and Neurosis Controlled Trials Registers (CCDAN-CTR) were searched up to June 2008.

The following databases were searched up to June 2008: the Cochrane Central registry of Controlled Trials; MEDLINE; EMBASE; CINAHL; PsycINFO. Reference lists of relevant papers were searched and experts in the field were contacted to determine if other studies were available.

Selection criteria

To be included, participants had to be diagnosed with PTSD using criteria outlined in the Diagnostic and Statistical Manual for Mental Disorders (DSM IV) and/or ICD criteria. Randomised controlled trials (RCTs) that considered one or more well-specified sports or games for alleviating and/or diminishing symptoms of PTSD were included.

Sports, and games were defined as any organized physical activity done alone or with a group and non-physical activities such as computer games and card games done alone or with a group. Psychological interventions such as music therapy, art therapy and play therapy and behavioural therapy were excluded.

Data collection and analysis

Two reviewers (SL and MD) separately checked the titles and abstracts of the search results to determine which studies met the pre-determined inclusion criteria. A flow chart was used to guide the selection process. No studies met the inclusion criteria.

Main results

The search strategy identified five papers but none of the studies met inclusion criteria.

Authors' conclusions

No studies met the inclusion criteria. More research is therefore required before a fair assessment can be made of the effectiveness of sports and games in alleviating symptoms of PTSD.

Plain language summary**Sports and games for post-traumatic stress disorder**

Traumatic events evoke strong feelings of fear, helplessness and anxiety. Many who experience a traumatic event overcome these strong emotions however a proportion does not and the emotional reaction may progress into Post-Traumatic Stress Disorder (PTSD). Pharmacological and psychological interventions are well known treatments for PTSD but little is known of the use of sports and games for the treatment of PTSD. This

review sought to examine studies using sports and games to alleviate symptoms of PTSD.

No studies met the inclusion criteria.

Appendix 6

Brief background on Israel

Israel became an independent state in 1948 forged from previously British ruled Palestine. A rapid influx of displaced Jews seeking a safe refuge immigrated from Russia, Yemen, Morocco, Eastern Europe, and the Middle East after the turbulence of the Second World War. However, the creation of Israel was met with trepidation and aggression by its Arab neighbours in disputes over the same land. Arab armies from Syria, Iraq, Iran, attempted to thwart the newly established Israeli Defence Forces in hopes of gaining land partitioned to Israel by the United Nations. After Independence was established, over 1 million Palestinian refugees were expelled from their homes and villages and fled to Lebanon and Jordan. Despite the acknowledgment of the Palestinian's plight, they were not warmly received in neighbouring countries as thousands fled for safety and a new life during the Israeli takeover (Shipler, 2002). The 1967 war resulted in Israel occupying Syria's Golan Heights, Jordan's West Bank and Egypt's Gaza and Sinai. These have all been passionately contended for, with the latter having been negotiated back into Egypt's hands (Shipler, 2002).

After Israel gained its independence in 1948, legal, government and educational systems were established, and businesses built as the promise of a new life unfolded. The current Israeli government is secular, parliamentary with all its citizens over 18 granted the right to vote. The population numbers 6.4 million and is predominantly Jewish (76%), the remainder mainly Arab. The Jewish community is multicultural with Europeans, middle-eastern people lately added to by Ethiopian immigrants. The main languages spoken are: Hebrew, Arabic and English. The main religions are Jewish, Moslem, Druze and Christians. The Druze are a secretive Islamic sect.

Language for describing such mixed ethnic and religious populations can be difficult. In the following descriptions, the terms Jewish, Arab and Druze are used to describe the communities examined in Israel. The term Palestinian will be used for those Arabs inhabiting Gaza and Palestinian territories. Currently, there are 1.2 million Arab Israeli's which comprise 18.5% of Israel's population. Just over 60% live predominantly in the

North and in Haifa with the next largest segment living in Jerusalem(El-Sheikh Muhammad, 2004; The Galilee Society: The Arab National Society for Health Research, 2007). Two thirds live in urban settings such as cities, and villages while the remaining third live in rural agriculture settings (Al-Krenawi, Lev-Wiesel, & Sehwal, 2007).

The occupied territories of the West Bank and Gaza Strip were established in 1967 after the Six Day War and approximately 3.8 million Arabs reside there. The Gaza Strip is situated on the South West coast of Israel and the West Bank is in the Middle East side of the country. These territories remain in political limbo leaving its inhabitants caught in on-going political crossfire. Those living in the Occupied territories, particularly the Gaza Strip deal with on-going Israeli air-strikes in response to Gaza based militants who repeatedly fire missiles into Israel. Palestinians in the Occupied territories also deal with Israel Defence Forces (IDF) home searches and interrogations at road blocks (Tessler & Grant, 1998).

The war of Lebanon in 2006, around the time this thesis was being planned, was a result of the Israel Defence Force reacting to the kidnapping of one of its soldiers by Hamas militants by bombing southern Lebanon extensively. Hamas, in turn, retaliated with kartousch rockets that rained upon northern Israel for several weeks. Israel eventually called a cease fire as the Lebanese government struggled to gain control of its coalition government(Urquhart, 2007). The kidnapped soldier was released in October 2011 after six years of negotiations (BBC, 2011).

An example of the continuing political upheaval occurred when the ground research for this project began in May/June of 2007. The Gaza Strip fell into political and economical turmoil as the leading factions of Hamas and Fattah struggled over administrative control. Hamas took control of Gaza while the West Bank remained under Fattah. The Israeli government did not support Hamas rule and continued with air-strikes, and economic blockades and militants continue to launch missile attacks against Israeli citizens(Tessler & Grant, 1998).²⁰

²⁰ Hamas and Fatah began negotiations to join together again in spring of 2011 .

However, even given such turbulence, conflict is considered somewhat more of an irregular occurrence for those living in the North of Israel, given that most of the on-going air strikes and bombings occur in the South, even though the on-going threat of acceleration always exists. It is this possibility of escalation and the daily reporting of conflict in the media that creates risk for mental health problems for adolescents in any part of Israel.