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Evaluating Resilience in Syrian and Jordanian Youth

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Abstract

This paper uses baseline data collected from the Child Youth Resilience Measure (CYRM) that was administered to a sample of 603 Jordanian and Syrian adolescents living in Northern Jordan during Fall 2015 as part of a broader evaluation of the impact of a mental health and psychosocial wellbeing intervention. Data were analyzed to 1) determine whether the questionnaire performed according to the 3-factor structure predicted in the literature and 2) explore relationships between CYRM scores, individual, family and contextual factors, and measures of mental health, stress and wellbeing. With some exceptions, the predicted 3-factor structure was found within the Syrian-Jordanian sample. While a significant positive relationship was identified between child education level and resilience, demographic variables were not collectively found to be strong predictors of resilience levels, as compared with measures of stress, mental health and wellbeing. While increased level of perceived stress emerged as a strong predictor of decreased resilience (β=-.267, P<0.001) an increased levels of insecurity emerged as a predictor of an increased resilience level (β=0.333, P<0.001). Unexpectedly, a different relationship between resilience and lifetime exposure to traumatic events emerged across nationality subgroup: exposure to traumatic events was a strong predictor of resilience in Jordanians (β=-.249, P<0.001), but unrelated to resilience among Syrians (β=0.000, P=0.999). These findings underscore the need for further research to clarify the relationships between, resilience, trauma and mental health and wellbeing.

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Introduction

Overview

This paper evaluates data collected from the Child Youth Resilience Measure (CYRM), a cross-cultural measure of resilience developed by Michael Ungar and colleagues at the Resilience Research Center in Nova Scotia, Canada, which was administered in Arabic to Syrian and Jordanian adolescents in Northern Jordan during the Fall of 2015. The aim of this paper will be twofold:

1. To explore the factor structure of the CYRM in order to validate its use within a Syrian and Jordanian population.

2. To model the variation in resilience scores among Syrian and Jordanian youth in order to gain insight into how individual, family and social factors interact with resilience scores among both of these populations.

During the summer of 2015, I traveled to Jordan to assist with an evaluation of an 8-week psychosocial intervention for Syrian and Jordanian youth. Led by the humanitarian organization Mercy Corps, the program aimed to improve psychosocial wellbeing and reduce stress by providing youth with structured activities and a safe community space.

I assisted local field workers with piloting the CYRM as a 12-item scale. After consultation with the research team, a 28-item version of the scale was then piloted and

incorporated into the broader program evaluation, which was conducted during Fall 2015 and Winter 2016.

This paper will focus on an analysis of CYRM-28 data as collected from program participants during baseline program data collection for the broader program evaluation. Results from the evaluation, including the effects of the intervention on stress, mental health and resilience will be reported elsewhere.

Resilience as a Dimension of Wellbeing

The study of resilience represents a "paradigm shift" within the broader field of research into trauma and risk (Panter-Brick, 2014, p.438). Such research has traditionally focused on understanding the many poor psychosocial and developmental outcomes that may occur in individuals and communities as a result of exposure to adversity (Panter-Brick, 2014). Resilience research on the other hand, attempts to determine when and how positive outcomes might occur, despite experiences of suffering and trauma. This new focus on resilience may be more properly considered as "a shift from efforts to appraise risk or vulnerability, towards more concerted efforts to enhance strength or capability." (Panter-Brick & Leckman, 2013, p.333) Whereas earlier research focused on the negative and pathological impacts of trauma, resilience research explores the pathways to wellbeing as well as the individual and contextual factors that support positive development. (Ungar, 2011)

Resilience research also has important practical applications for humanitarian and development work. As Catherine Panter-Brick and James Leckman note in an editorial, resilience findings have the potential to offer valuable insight into how to

design interventions that effectively promote resilience in individuals and communities affected by conflict and turmoil. Resilience research can offer valuable information about the best time and form in which to intervene in a population affected by adversity in order to achieve the greatest impact. (Panter- Brick & Leckman, 2013)

Resilience as an Academic Construct

Resilience as an academic construct has frequently been plagued by "definitional ambiguity." (Ungar, 2011, p.2) It has at various times, been defined as a personal attribute, i.e. the "ability to bounce back" (Prince-Embury & Saklofske, 2012, p. vii) or as a function of the environment (Ungar, 2012). Different waves of resilience research have also focused on such diverse themes as defining personal and environmental factors associated with resilience, explaining the processes through which resilience happens, analyzing the effects of interventions, and analyzing the impact of genetic differences (Ungar, 2012). Research has been critiqued for frequently oversimplifying resilience into a set of defined factors that can be plugged into a regression model to predict outcomes. (Panter-Brick, 2014, p.441) Other critiques have faulted the literature for being over-deterministic and implying that the presence of certain risk and protective factors will determine the destiny of a given individual. (Ungar & Liebenberg, 2009)

Broadly, debates in the literature have delved into the question of whether resilience is best understood as "a trait, a process or an outcome." (Panter-Brick & Leckman, 2013, p.333) Additional research has examined the question of whether or not resilience is rare or common in the population (Panter-Brick & Leckman, 2013).

The study of resilience processes in children has been a particularly popular field of inquiry because of its implications for developmental processes. It has been argued that resilience represents "the positive end of the developmental continuum that occurs for children and youth who experience both acute and chronic stressors such as poverty, war, etc." (Ungar & Liebenberg, 2009, p.3) Thus, the study of resilience in children must to some degree involve the study of how children respond to exposure to these stressors or to the risk of such exposure (Ungar & Liebenberg, 2009). It can therefore be said that the presence of risk in the environment is what distinguishes resilience from normal positive functioning (Barber & Doty, 2013).

Distinguishing resilience from the psychological concept of posttraumatic growth, which Tedeschi and Calhoun define as "positive psychological change as a result of the struggle with highly challenging life crises," (2004, p.1) remains a more complicated task that has also become the focus of research. For Westphal and Bonanno, posttraumatic growth can be understood as positive growth after a sustained period of negative functioning due to trauma, whereas resilience suggests limited or no impact on functioning in the face of a traumatic event (Westphal & Bonanno, 2007).

Resilience In Wartime

If resilience is closely related to exposure to traumatic events, then war, with its propensity for generating severe traumatic events, is an important site for resilience research (Barber & Doty, 2013). Resilience has been represented elsewhere as an "intuitively useful construct to explain why, despite significant exposure to war,

individuals and families achieve emotional adjustment and social functioning."

(Eggerman & Panter-Brick, 2010, p.71)

In a critique of the literature, Barber and Doty suggest that a key assumption underlying much resilience research in wartime is that exposure to greater and more severe degrees of trauma will lead to poor functioning and decreased resilience among a large percentage of the population (Barber & Doty, 2013). However, findings from research in conflict settings do not always clearly demonstrate this, suggesting that the relationship between resilience and wartime trauma may be more complicated. As Barber and Doty argue, while there are certainly positive correlations between war-time trauma and some degree of negative functioning, the literature does not in fact show high degrees of dis-function among populations in wartime (Barber & Doty, 2013). Findings from across and within different wartime settings suggest that individual perceptions of and reactions to such trauma are many and varied, mediated by both cultural and individual factors, and are not predetermined to negatively affect health and wellbeing (Barber & Doty, 2013).

Resilience In a Cross Cultural Context

Much of the early research on resilience has been critiqued for its failure to take into account the effect of contextual and cultural factors on resilience as well as its reliance on Western norms of positive functioning. (Ungar, 2011) One of the leaders of this cultural critique has been Michael Ungar, the Director of the Resilience Research Centre (RRC), in Nova Scotia, Canada. The RRC has worked extensively to understand the relationship between cultural factors and resilience, and has found considerable

variation across cultural groups with respect to how resilience is conceptualized (Ungar & Liebenberg, 2011).

In part to account for such variation, Ungar and colleagues espouse a social ecological model of resilience, (Ungar & Liebenberg, 2011) which can be understood as "both a process of the child's navigation towards, and the capacity of individuals to negotiate for, health resources on their own terms." (Ungar, 2008, p.225) This approach emphasizes the importance of context and local meaning, making it particularly beneficial for international and cross-cultural research.

As Ungar argues, "the implicit concept underlying this definition is of negotiation, the provision of health resources in ways that are meaningful to individuals." (Ungar, 2008, p.225) The model is a multidimensional construct that shifts focus from the individual's internal capabilities to the relationship between the individual and the environment, as well as the nature of that environment (Ungar, 2011). Resilience then becomes the result of a mix of contextually specific stressors and individual and environmental resources that will largely vary across settings (Ungar, 2004). This construct of resilience is also crafted to be value neutral, in order not to supplant local and individual understandings of positive and healthy development (Ungar, 2011). For example, in much of the early literature, staying in school has been frequently understood as a mark of resilient, positive functioning. However, Ungar offers the example of a community in rural India that was plagued with high levels of sectarian violence, where many families encourage their children to join paramilitary groups instead of remaining in school (Ungar, 2004, p.351). Ungar stresses the importance of not losing such localized interpretations in the rush to develop generalizations. Finally, extensions of the

ecological model have drawn attention to the structural and political factors that help shape resilient, or non-resilient functioning, (Panter-Brick, 2014) bringing focus to the upstream forces which shape the processes of resilience, such as violent political conflict and social insecurity.

Syrian Refugees in Jordan

The violent conflict in Syria is in its 5th year and shows no signs of abating. As of March 2016, the UNHCR estimates that 4,812,993 Syrians have been forced to flee the country, making it the largest refugee crisis in the world. (UNHCR Syria Regional Refugee Response, n.d.) Most refugees currently reside in the Middle Eastern countries that border Syria, with the vast majority living in Lebanon, Jordan and Turkey (UNHCR Stories from Syrian Refugees, n.d.). In a situation that is unprecedented in the history of modern refugee crises, the majority of refugees live within rural and urban communities instead of within a camp setting. (World Bank: Syrian Refugees Living In Jordan and Lebanon, 2015) While many refugees receive some level of support from humanitarian organizations, they are mainly left to access the same public services as individuals in their host communities (UNHCR Stories, n.d.). In the comparatively small country of Jordan, the massive influx of people has severely strained local infrastructure and public services, exacerbating tensions between refugees and Jordanians. (Luck, 2013)

In Jordan, where over 638,633 Syrian refugees are currently living (UNHCR Regional Refugee Response) 82% live in urban settings (UNHCR Syrians in Jordan, 2015). Furthermore, 52.1% all Syrian refugees in Jordan are children under 18 (UNHCR Syrians in Jordan, 2015), an unsurprising figure in a refugee crisis that has been primarily

composed of women and children (UNHCR Stories, n.d.). Child and adolescent refugees, particularly those who have been exposed to violence, are at a higher risk for a range of mental health and developmental problems (Fazel et al., 2012), making them a key target population for interventions by humanitarian and health professionals.

The "No Lost Generation" Initiative

Local and international humanitarian organizations have designated adolescent Syrian refugees as a subgroup with particular importance, stating that adolescents are "the generation which will have an important role to play in rebuilding Syria after the conflict" (Mercy Corps: Syrian Adolescents, n.d.) In Jordan, 84,213 or 13.3% of all Syrian refugees in the country are adolescents between 12-17 (UNHCR Syrians in Jordan, n.d.). Research conducted with Syrian youth in Jordan and Lebanon and Turkey has suggested that adolescent refugees face a number of pressures, from psychological isolation, to post traumatic stress disorder. Their education has been disrupted, and they are often forced to earn income for their families, either through a job or through an early marriage (Mercy Corps: Syrian Adolescence, 2014). In 2013, to respond to the needs of children and adolescent refugees, UNICEF joined with multiple organizational and agency partners to develop the "No Lost Generation" initiative, in order to "provide opportunities for children and youth affected by the crises in Syria and Iraq to heal, learn and develop again" (About No Lost Generation, n.d.). With guidance from UNICEF and funding and assistance from its many local and international partners, the initiative aims to improve child and youth protection services and offer educational, social, and civic

engagement opportunities to Syrian refugee youth living in Turkey, Lebanon, Jordan, Iraq or Egypt.

The humanitarian organization Mercy Corps is a non-governmental organization that provides a spectrum of services to Syrian refugees living throughout the Middle East. (Mercy Corps: Our work, n.d.) Mercy Corps has experience delivering interventions targeted towards adolescents and is a key strategic partner in the "No Lost Generation" Initiative (Mercy Corps: Our Work, n.d.)

In 2015, as part of this initiative, Mercy Corps ran several waves of an 8-week psychosocial intervention for Syrian and host community adolescents in northern Jordan that was dedicated to improving mental health symptoms and psychosocial adjustment by offering youth "the establishment of a 'safe space' within the community as a base for activities and site of protection; the facilitation of social support and self-expression; and structured activities: access to scheduled group activities, such as those building life skills or community service." (Panter-Brick, 2014, R2HC) Program sites were the cities of Jarash, Irbid, Mafraq, and Zarqa, four Jordanian cities located close to the Syrian border. Participants in each site attended a weekly workshop run by trained coaches and based around a particular skill-building theme including beauty, computer repairs, fitness, sewing or drama. The program aimed to improve mental and psychosocial outcomes for participants by improving social support and social cohesion and reducing levels of stress and mental distress." (Panter-Brick, 2014, R2HC)

The "No Lost Generation" Program Evaluation

      With funding support from the organization Research for Health in Humanitarian Crises (R2HC), a team lead by researchers at Yale University established a research consortium to build collaboration among local and international partners. The team conducted a robust evaluation of the "No Lost Generation" program in order to assess its effectiveness in terms of a range of stress, mental health, and pro-social outcomes. Informed consent was obtained from each participant and their families, and ethical approval for the study was obtained from Yale University as well as from the Jordanian Prime Minister's Office. The evaluation team utilized a combination of biological and psychosocial measures to assess participants stress, mental health and wellbeing. The CYRM-28, which is the focus of this paper, was included in the evaluation as a measure of resilience.

Initial Development of the Child Youth Resilience Measure

      In 2003, in order to further investigate cross-cultural understandings of resilience, an international team of researchers led by Michael Ungar and Linda Liebenberg of the RRC, launched the International Resilience Project, a mixed methods project in that was conducted in 14 communities across 11 countries (Ungar & Liebenberg, 2011). The project resulted in the development of the CYRM-28, a tool designed to "account for the psychosocial resources available to youth globally, making cross-cultural comparison possible." (Ungar & Liebenberg, 2011, p.127) Using an iterative process based primarily around focus groups conducted in each community, the team developed a 28-item questionnaire that attempted to account for common themes across communities.

Further validation of the scale among groups in Canada confirmed that the CYRM-28 has 3 subscales: Individual, Caregiver, and Context, reinforcing the multidimensional nature of the construct. (Ungar & Liebenberg, 2011). In turn, each subscale contains 2 to 3 item groupings resulting in a total of 8 clusters for the overall scale that account for commonly measured resilience factors such as individual personal and social skills, peer support, psychical and psychological family support, and an educational, spiritual, and cultural sense of belonging (Ungar & Liebenberg, 2011). (See Figure 1).

Figure 1:

Confirmatory Factor Analytic Model of the CYRM-28

Individual	→	Personal Skills	(5 items)
		Peer Support	(2 items)
		Social Skills	(4 items)
Caregiver	→	Physical Caregiving	(2 items)
		Psychological Caregiving	(5 items)
Context	→	Spiritual	(3 items)
		Culture	(5 items)
		Education	(2 items)
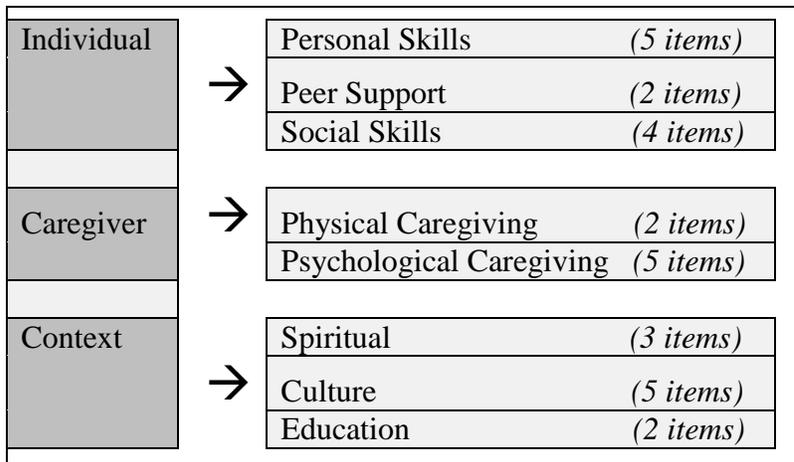
Adapted from:
[1] Liebenberg, L., Ungar, M., & Van de Vijver, F. (2012). Validation of the child and youth resilience measure-28 (CYRM-28) among Canadian youth.*Research on Social Work Practice*, *22*(2), 219-226

Piloting the CYRM-28 in Jordan

During the summer of 2015, I traveled to Jordan to assist the field team with piloting the CYRM with Syrian and Jordanian youth, prior to its inclusion in the evaluation. A 12-item version of the CYRM was initially tested with a small focus group of youth. The results from this focus group confirmed the feasibility of using the 28-item

scale, which was then adopted. With guidance from members of the evaluation team, the CYRM-28 was translated into Arabic by a native Jordanian Arabic speaker, and then translated back to English by other members of the team.

The translated CYRM-28 was piloted with 41 youth including both Syrians and Jordanians in the city of Mafraq. Scores yielded an overall Cronbach's alpha of .712. The individual subscale yielded an alpha of .764, the family subscale yielded an alpha of .629, and context yielded an alpha of .572. While the subscale alphas were low, this was judged to be most likely the result of the small sample size. The scale was piloted a second time with youth in Za'atari refugee camp, yielding similar results.

In Mafraq, focus groups were conducted with a number of youth in order to assess face validity for each item in the scale. Groups focused primarily on the questions that had performed most weakly for the pilot sample and resulted in changes to the wording of 8 questions in order to ensure clarity of meaning among this population.

Resilience Analysis Hypotheses

1. The CYRM-28 will assume the three-factor structure predicted by Ungar and colleagues, thus validating its use with the Jordanian-Syrian sample.
2. A positive relationship will be found between total resilience scores and economic resources, and educational level.
3. A difference in resilience scores will be found between Syrians and Jordanians.
4. A complex relationship will be found between changes in resilience and changes in symptoms of stress, insecurity and/or mental health

Since its development, the CYRM28 has been successfully used in a multitude of different countries and cultures. Therefore it is reasonable to hypothesize that the measure will be successfully validated for use in this sample population.

Ungar understands resilience as a multidimensional concept that consists of a negotiation between the individual and their environment that relies both on individual capacities and the availability of resources in the environment. Based on this construct, a positive relationship between environmental resources and resilience scores is hypothesized. While resources may be conceptualized in a variety of ways, based on the availability of data for this sample, here it has been operationalized as 1) economic resources (household wealth and economic power) and 2) education level.

While the relationship between wartime trauma and resilience may not be as straightforward or widespread as previously assumed, the literature does support a difference in resilience processes between conflict and non-conflict settings (Barber & Doty, 2013). Therefore, it is reasonable to hypothesize a difference in resilience scores between Syrians, who have experienced conflict and displacement and Jordanians, who are living in a relatively more stable environment.

Finally, stress, insecurity and poor mental health are concepts that are closely related to wartime trauma and violence. In so far as the relationship between resilience and wartime trauma may not be easily defined, it is reasonable to hypothesize some degree of complexity in the relationship between resilience, stress, and mental health.

Methods

"No Lost Generation" Program Evaluation Methods

The main evaluation followed an experimental design with an intervention and a control group, and aimed to assess a variety of dimensions of stress, distress, mental health and wellbeing. Adolescents were randomized to the intervention or the control group, which was a program waiting list. At the start of baseline data collection, there was a total of 603 participants between the ages of 13 and 17 enrolled in the study. Data were collected in 2 stages, immediately before and after the intervention, during the fall of 2015 and the winter of 2016.

Participants were assessed via cortisol biomarkers as well a battery of psychosocial measures of stress and resilience that were administered to participants by local field workers who had been recruited and trained by the evaluation team. Demographic data was collected, including information regarding socio-economic status, educational history, household composition and wealth and experiences of displacement. Upon entry into the program, Mercy Corps staff members assigned participants a vulnerability score (low, moderate, high) based on a composite of resources and mental health variables. These vulnerability scores were also collected by field workers and passed onto the evaluation team, where they were recoded into a bivariate (low-moderate, high).

In order to measure participant exposure to traumatic events, field workers implemented the Traumatic Events Checklist, a measure that had been adapted from the Harvard Trauma Questionnaire.

Finally, field workers used the following screening instruments in order to measure levels of stress, distress, mental health symptomatology, and resilience:

The Child Youth Resilience Measure (CYRM-28): a self-report cross-cultural measure of resilience. (See "Initial Development of the Child Youth Resilience Measure" for more details.)

Perceived Stress Scale (PSS): a self-report measure of situational stress Developed by Cohen et al. in 1983 and validated for use in the Arab world (Almadi et al., 2012) (Ziadni et al., 2011).

The Human Distress Index (Hdistress): self-report measure of anxiety and fear around displacement and related loss of control

The Human Insecurity Index (Hinsecurity): self-report measure of perceptions of threats to physical welfare (violence, housing/food insecurity, fears for family) Both Hdistress and Hinsecurity originated in the Arab world as measures of the broader psychological impacts of conflict on Palestinian youth in Gaza and the West Bank. (Ziadni et al., 2011).

The Arab Youth Mental Health Scale (AYMH): a self-report measure of mental health symptoms that screens for depression and anxiety among Arab youth. (Mahfoud et al., 2001).

Strengths and Difficulties Questionnaire (SDQ): a self-report measure of pro-social behavior that also screens for a number of psychiatric disorders(Goodman, 1997), The SDQ has been validated for use in the Arab world (Alyari & Goodman, 2006).

The Child Revised Impact of Events Scale (CRIES): a self-report measure which screens for symptoms of post traumatic stress disorder (Perrin at al., 2005) CRIES-8 is recommended by the Children in War Foundation and was successfully used among Palestinian youth after the most recent conflict (Kolltveit et al., 2012).

Computing the Wealth Index and Dependency Ratio Variables

Two proxy variables were calculated in order to represent different dimensions of economic resources. Since the majority of Syrian refugees are barred from formal employment in Jordan, simply collecting income information would present an

incomplete picture household wealth. A wealth index variable was computed using data collected by Mercy Corps, wherein participants were asked whether they had certain items in their household, including a dishwasher, a laundry machine, a TV and a computer. These items were summed into a composite variable by the evaluation team for use as a proxy for household wealth. This wealth index variable has also been used successfully in Afghanistan to represent household wealth. (Eggerman & Panter-Brick, 2010)

Next, a dependency ratio variable was computed by dividing the number of able-bodied adults (between 18 and 65) in the household by the number of dependents in household (including children under 18, the disabled, and the elderly). This measure has been used previously by UNHCR Jordan as an indicator of economic power and has been shown to be "a factor that contributes to both refugee resilience and vulnerability." (Washington, Brown, Santacroce & Tyler, 2014, p. 24) Therefore, it was included in the dataset to represent another aspect of household economic resources.

Validation of the Questionnaire

Responses to the CYRM were analyzed in order to determine their similarity to the factor structure predicted by Liebenberg et al. during the initial validation of the scale in Canada (Liebenberg et al., 2012). Using SPSS (Version 23) a principal components analysis was conducted on all 28 items in the measure, using a Direct Oblimin Rotation to account for possible multicollinearity. Three fixed factors were used in order to correspond to the 3 independent subscales predicted by Liebenberg et al. This analysis was then run with 8 fixed factors, to correspond to the 8 question sub-groups, and a third

time, with no fixed factors. These three analyses were compared to each other in order to determine the most appropriate structure.

Lastly Cronbach's alpha was computed in order to assess internal reliability for the scale over all and for each of the 3 subscales. These values were compared to .70, the commonly accepted minimum alpha value within health literature (Tavakol & Dennick, 2011).

Descriptions of the Sample

Basic descriptive statistics were computed to describe the sample over all and by nationality, according to basic demographic variables (age, gender, nationality, education level), vulnerability score (as assigned by Mercy Corps), educational level, number of traumatic events, wealth index and dependency ratio. Descriptive statistics were also computed to describe baseline scores of each of the eight questionnaires. Normality of the data was assessed for overall scores and for each of the three subscales, by dividing the skewness statistic by the standard error. Simple bivariate correlations were used in order to look for associations between resilience scores (over all and by subscale) and sum of household items and the dependency ratio. Correlations were analyzed overall and by nationality.

Resilience Regression Modeling

A 2-step hierarchical multi-linear regression model was built in order to model total CYRM scores at baseline. An initial model was built using the following basic demographic variables as predictors: gender, age, nation, vulnerability score and

education variables. This model was analyzed alone and then with economic variables (wealth index and dependency ratio) included.

In the second step, variables that were indirectly or directly hypothesized to be related to mental health were added, including: total number of traumatic events and scores for each of the six other scales (PSS, Hinsecurity, Hdistress, AYMH, SDQ, CRIES).

The full 2-step model was run using a forward selection method, to determine if any predictors should be dropped from the model. The model was then rerun with these variables excluded. Next, the model was run for each of the three individual subscales. Finally, the sample was divided by nationality and the model was run to predict resilience scores overall and by subscale, for Jordanians and Syrians separately.

Results

Analysis of the Factor Structure

Using SPSS (version 23), a principal components analysis with no fixed factors and a Direct Oblimin rotation was run. This returned 8 separate factors, eliminating the need to run the analysis separately to account for the 8 sub group question clusters. KMOs and Bartlett's Tests confirmed sample adequacy as well as the appropriateness of analysis. 8 factors cumulatively explained 56.42% of the variance. An investigation of the Pattern Matrix revealed that items loaded most strongly onto the first factor. This first factor also had an initial eigenvalue of 6.510 and explained 23.25% of the variance by itself. The Pattern Matrix revealed that with a few exceptions, items on the first factor

appeared to correspond to the items on the original individual subscale. However, the remaining 7-factors had eigenvalues between 1.66 and 1.048 and displayed no clear pattern within the Pattern Matrix (See Figure 2).

Figure 2:

Factor Loadings for the CYRM 28 with Baseline Sample (8 Fixed Factors)

Subscale	Question Clusters	Items	Factor Loadings [1]							
			1	2	3	4	5	6	7	8
Individual	Personal Skills	2	0.602	0.263	0.045	0.014	0.014	0.073	0.115	-0.11
		8	-0.071	-0.127	-0.052	0.088	-0.129	-0.066	0.662	0.03
		11	0.482	0.261	-0.131	0.17	-0.037	-0.166	-0.078	0.153
		13	0.061	0.375	0.008	0.014	0.194	-0.062	0.589	-0.046
		21	0.497	-0.213	0.007	0.086	-0.204	-0.215	0.255	0.142
	Peer Support	14	0.282	0.148	-0.147	-0.013	0.1	-0.418	0.066	-0.053
		18	-0.021	0.031	-0.046	0.092	0	-0.738	0.159	-0.048
	Social Skills	4	0.765	-0.061	0.05	0.047	-0.033	0.009	-0.202	-0.067
		20	0.329	-0.416	-0.061	0.172	0.062	-0.307	0.235	-0.038
		15	0.134	0.055	-0.01	0.308	-0.114	-0.366	0.035	-0.139
		25	0.187	-0.018	0.043	0.155	-0.205	-0.001	0.204	-0.397
Caregiver	Physical Care giving	5	0.256	0.071	-0.589	-0.041	-0.05	-0.123	-0.215	-0.135
		7	-0.055	-0.166	-0.301	-0.07	-0.087	-0.587	-0.193	-0.014
	Psychological Care giving	6	0.111	0.645	-0.216	-0.036	-0.089	0.103	0.009	-0.025
		12	0.01	0.68	0.001	0.124	-0.148	-0.146	0.034	-0.022
		17	-0.081	0.169	-0.729	0.065	0.001	-0.172	0.127	0.146
		24	-0.092	-0.027	-0.599	0.105	0.031	0.122	0.08	-0.4
		26	-0.034	0.022	-0.248	0.123	0.018	-0.018	-0.011	-0.696
Context	Spiritual	9	0.102	-0.153	-0.27	-0.047	-0.598	0.294	0.278	0.062
		22	0.111	0.208	-0.137	-0.067	-0.412	0.097	0.107	-0.26
		23	0.014	0.099	0.033	0.027	-0.165	-0.131	0.354	-0.331
	Education	3	-0.037	0.093	0.078	0.072	-0.786	-0.035	-0.11	-0.028
		16	-0.039	0.212	0.116	0.079	-0.583	-0.324	-0.012	-0.113
	Cultural	1	0.433	-0.023	-0.074	-0.068	0.051	0.123	0.229	-0.25
		10	0.052	-0.037	0.055	0.835	-0.106	0.065	-0.011	0.055
		19	0.114	0.06	0.14	-0.152	-0.037	-0.556	0.27	-0.191
		27	0.1	-0.005	0.141	0.049	-0.093	-0.193	-0.126	-0.708
		28	-0.065	0.032	-0.065	0.829	0.117	0.087	0.009	-0.104

Factor loadings derived from Pattern Matrix (Direct Oblimin Rotation)
8 factors cumulatively explained 56.419% of the variance
[1]highest factor loading for each item are shaded

The principal components analysis was then repeated with 3 fixed factors. This explained 35.19% of the total variance. Again, the Pattern Matrix showed items loaded most strongly onto the first factor (Eigenvalue=6.510). An analysis of the Pattern Matrix revealed a clear 3-factor structure that largely corresponded with the predicted subscales (See Figure 3). Only 7 items demonstrated deviations from their predicted subscale:

Individual Subscale:

8. I try to finish what I start:

(item loaded partially onto the individual subscale,

but most strongly onto the context subscale)

13. I am able to solve problems without harming myself or others:

(*item loaded partially onto the individual and context subscales,*

 but most strongly onto the caregiver subscale)

25. I have opportunities to develop skills that will be useful later in life

(*item loaded partially onto the individual and context subscales,*

but most strongly onto the context subscale)

Caregiver Subscale:

7. If I am hungry, there is enough to eat

(*item loaded onto the caregiver subscale,*

but most strongly onto the individual subscale)

Context:

19. I am treated fairly by my community

(*item loaded most strongly onto the individual subscale only)*

22. I participate in organized religious activities

(*item loaded onto the context subscale,*

but most strongly onto the caregiver subscale)

27. I enjoy my community's traditions

(*item loaded onto the caregiver and context subscales,*

but most strongly onto the individual subscale)

Figure 3:

Factor Loadings for the CYRM 28 with Baseline Sample (3 Fixed Factors)

Subscales	Question Clusters	Items	Factor Loadings[1]		
			1	2	3
Individual	Personal Skills	2	0.272	0.237	0.262
		8	0.24	-0.076	0.333
		11	0.359	0.262	0.075
		13	0.192	0.243	0.141
		21	0.588	-0.16	0.275
	Peer Support	14	0.55	0.252	-0.124
		18	0.73	0.077	-0.109
	Social Skills	4	0.411	0.003	0.178
		20	0.686	-0.254	0.114
		15	0.485	0.106	0.234
		25	0.25	0.135	0.494
Caregiver	Physical Care giving	5	0.217	0.592	-0.151
		7	0.487	0.147	-0.329
	Psychological Care giving	6	-0.184	0.678	0.08
		12	0.003	0.529	0.175
		17	0.123	0.608	-0.206
		24	-0.026	0.561	0.079
		26	0.136	0.458	0.222
Context	Spiritual	9	-0.148	0.169	0.494
		22	-0.04	0.441	0.393
		23	0.249	0.197	0.353
	Education	3	-0.084	0.153	0.527
		16	0.208	0.213	0.391
	Cultural	1	0.242	0.156	0.219
		10	0.121	-0.158	0.577
		19	0.631	0.047	-0.001
		27	0.314	0.191	0.281
		28	0.068	-0.001	0.443

Factor loadings derived from Pattern Matrix (Direct Oblimin Rotation)
3 factors cumulatively explained 35.186% of variance
[1]highest factor loading for each item is shaded

Cronbach's Alpha for total CYRM scores was .872, which suggested very strong inter-scale reliability. Two of the subscales (Individual and Context) were also judged to have adequate or strong reliability. The alpha value for the Caregiver subscale was equal to 0.679, slightly below the commonly accepted cutoff point of 0.7 (Tavakol, & Dennick,

2011). However, in light of the high scores on the other subscales and overall, it was

judged to be acceptable. (See Figure 4)

Figure 4:

Cronbach's Alpha for Baseline Sample CYRM Scores (N=601)[1]

Individual Subscale	0.783
Caregiver Subscale	0.679
Context Subscale	0.722
CYRM (Total Scale)	0.872

[1]Total Evaluation Sample N=603, however 2 participants did not complete the CYRM

Sample Description

The pre-intervention sample (N=603) included 292 participants in the

experimental group and 311 participants in the control group. The total sample was

53.7% Syrian and 46.3% Jordanian. Over all, the sample was 58.4% male and 41.6%

female. The average age of participants was 14.23 (SD=1.81, Min=10, Max=19).

Finally, Syrian participants had been displaced from their country on average for 2.51

years (SD:1.18).

Program participants were distributed between program sites in 4 northern

Jordanian cities: 142 participants in the city of Mafraq, 191 participants in the city of

Jerash, 134 participants in the city of Irbid, and 136 participants in the city of Zarqa.

Among participants who attended school, the average education level (highest grade

completed) was 7.12 (SD=2.13). Only one participant, a Syrian in the control group, was

not enrolled in school at the time of baseline data collection.

Jordanians reported higher scores for the economic indicator variables as

compared to Syrians, suggesting that Jordanians on average have greater household

wealth. Across the entire sample, the average wealth index score (sum of household

items) reported was 8.20 (SD=2.74). Jordanians reported an average wealth index score

of 10.09 (SD=2.03), whereas Syrians reported an average of 6.51 items (SD=2.18)

(P<.001). The average dependency ratio (independent adults/dependents in the

household) for the entire sample was 1.38 (SD=0.487). Here again, Jordanians reported

higher scores than Syrians (Jordanian mean: 1.51, SD=0.50; Syrian mean: 1.27,

SD=0.45) (P<.001).

Among the total sample, the average number of lifetime traumatic events reported

was 4.05 (SD=3.78). As expected, Syrians reported exposure to significantly more

traumatic events than Jordanians. (Jordanian mean: 1.21 events, SD=1.75; Syrians mean:

6.51 events, SD=3.32) (P<.001) (See Table 1).

Description of CYRM Scores

The distribution of CYRM total scores was found to be negatively skewed, with a

skewness statistic of -.773 (SE=.100) (See Figure 5). By dividing the skewness statistic

by the standard error (a commonly accepted method for determining normality (Rose,

Spinks, & Canhoto, 2015)), it was determined that the data should be treated as non-

normal. (See Figure 5)

Figure 5

Distribution of Total CYRM Scores:

Distribution of CYRM Scores by Subscale:

| Individual | Caregiver | Context |
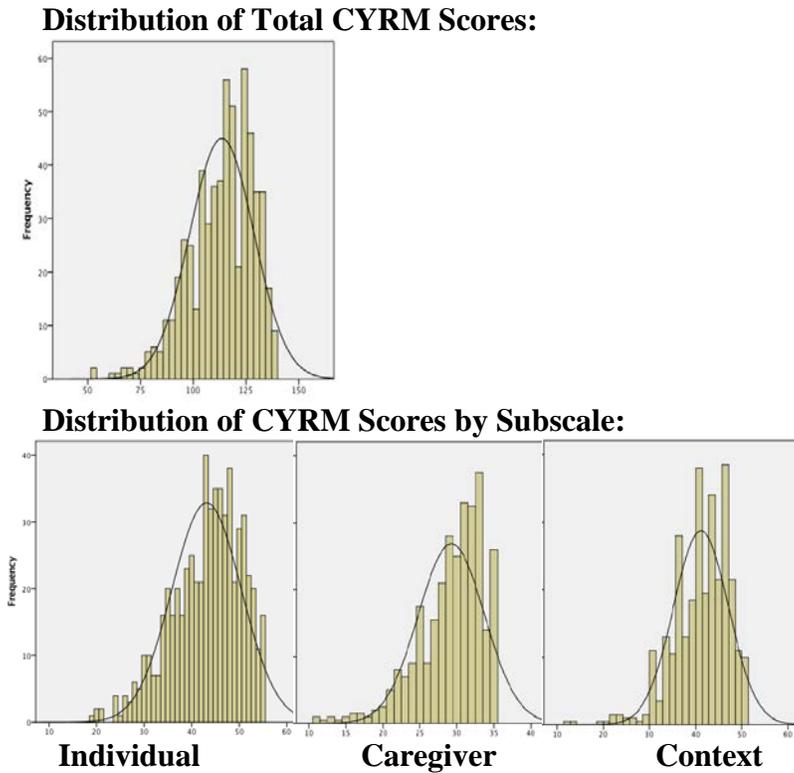
CYRM scores were tested for differences by nationality, gender, experimental arm and vulnerability score using the Mann-Whitney-U Test for non-parametric data. There was no significant difference in scores by gender or by experimental arm. However, there was a significant difference by nationality with Syrians reporting lower CYRM scores than Jordanians (Syrian mean: 111.41, SD=15.03; Jordanian mean: 116.03, SD=15.08) (P<.001). In addition, there was a significant difference by vulnerability score, where participants with low-moderate vulnerability had higher CYRM scores than participants with high vulnerability (low-moderate vulnerability mean: 114.27 (SD=15.04); high vulnerability mean: 110.80, SD=15.61) (P=.034). (See Table 1)

Table 1:

Description of the Sample at Baseline Data Collection

	Syrian N=324	**Jordanian** N=279	**Total** N=603	**Significance**
Sex				0.741[a]
Male	187 (31.0%)	165 (27.4%)	352 (58.4%)	
Female	137 (22.7%)	114 (18.9%)	251 (41.6%)	
Vulnerability Score				.000[a]
High	87 (14.4%)	40 (6.6%)	127 (21.1%)	
Low-Moderate	237 (39.3%)	239 (39.6%)	476 (78.9%)	
RCT				0.870[a]
Experimental	155 (25.7%)	136 (22.6%)	291 (48.3%)	
Control	169 (28.0%)	143 (23.7%)	312 (51.7%)	
Age	14.14 (SD:1.94)	14.34 (SD:1.63)	14.23 (SD:1.81)	0.186[b]
Number of Traumatic Events	6.51 (SD:3.32)	1.21 (SD:1.75)	4.05 (SD:3.78)	P<.001[b]
Wealth Index	6.57 (SD:2.18)	10.09 (SD:2.03)	8.20 (SD: 2.74)	P<.001[b]
Dependency Ratio	1.27 (SD:0.45)	1.51 (SD:0.50)	1.38 (0.49)	P<.001[b]
Highest Grade Completed	6.61 (SD:2.27)	7.71 (SD:1.79)	7.12 (2.128)	P<.001[b]
Displacement Time (Years)	2.51 (SD:1.18)			
PSS	28.04 (SD:5.73)	25.75 (SD:5.67)	26.98 (SD:5.94)	P<.001[b]
SDQ	14.32 (SD:5.43)	13.45 (SD:5.65)	13.92 (SD:5.55)	0.054[b]
AYMH	35.07 (SD:8.73)	31.48 (SD:7.70)	33.41 (SD:8.46)	P<.001[b]
Human Insecurity	67.22 (SD:20.63)	61.82 (SD:22.23)	64.71 (SD:21.54)	0.002[b]
Human Distress	39.76 (SD:21.59)	31.48 (SD:17.83)	35.93 (SD:20.34)	P<.001[b]
CRIES	18.31 (SD:11.10)	5.36 (SD:10.14)	13.30 (SD:12.46)	P<.001[b]
Resilience[1]	114.00 (SD:15.03)	119.00 (SD: 15.08)	116.00 (SD:15.22)	P<.001[c]
Individual	43.00 (SD:7.45)	46.00 (SD:6.88)	44.00 (SD:7.30)	P<.001[c]
Caregiver	29.00 (SD:4.52)	31.00 (SD:4.34)	30.00 (SD:4.46)	.001[c]
Context	41.00 (SD:5.70)	43.00 (SD:6.21)	42.00 (SD:5.96)	.008[c]

Means and SD are reported for continuous variables,

N and Percentages are reported for categorical variables

[1] Median and SD are reported for Resilience Total and Subscale Scores

(Resilience scores are non-normally distributed. See results for more information)

a X2 Test

b Independent 2 Sample T-Test

c Non-parametric Mann-Whitney-U Test for independent samples

Next, a series of bivariate correlations were run which compared CYRM scores by education level and by the dependency ratio and wealth index variables. For the overall sample, no significant relationship was found between educational level and total CYRM scores. However, a small but significant positive correlation was found between total CYRM scores and the wealth index (r:0.184, P<.001) as well as between total CYRM scores and the dependency ratio (r:0.103, P=0.011). For Jordanians, the significant relationship between wealth index and CYRM total scores held (r:0.166, P:0.006). For Syrians, no significant relationship was found between the wealth index and total CYRM scores. (r:0.072, P:0.195). No significant relationship was found between total CYRM scores and the dependency ratio for Jordanians (r:0.063, P:0.292) or for Syrians (r:0.075, P:0.177). (See Table 2)

When each of the 3 CYRM subscales for the entire sample were correlated with education and the 2 wealth variables, significant relationships were found between education level and the Individual Subscale, but not with the Caregiver or Context Subscales. A significant relationship was also found between the wealth index variable and each of the 3 subscales. Next, when subscales were correlated with the Dependency Ratio, significant relationships were found with the first two subscales (Individual and Caregiver) but not with the final subscale (Context). (See Table 2)

After once again dividing the samples by nationality, significant correlations were found among Jordanians between each of the subscales, and the wealth index. However, no significant relationships were found for this variable among Syrians. For the dependency ratio as well as for educational level, there no significant correlations found between the CYRM subscales and either variable (See Table 2).

Table 2:

CYRM-28 Correlations at Baseline Data Collection

		CYRM Total		Subscale 1 (Individual)		Subscale 2 (Caregiver)		Subscale 3 (Context)	
		r	*P*	*r*	*P*	*r*	*P*	*r*	*P*
Syrian	Educational Level	-0.036	0.521	0.04	0.472	-0.127	0.023	-0.045	0.417
	Wealth Index	0.072	0.195	0.061	0.277	0.077	0.17	0.049	0.381
	Dependency Ratio	0.075	0.177	0.104	0.062	0.066	0.238	0.008	0.885
Jordanian	Educational Level	0.015	0.807	0.078	0.193	-0.062	0.305	-0.008	0.895
	Wealth Index	0.166	0.006	0.136	0.024	0.166	0.005	0.137	0.023
	Dependency Ratio	0.063	0.292	0.058	0.335	0.111	0.064	0.011	0.855
Total	Educational Level	0.024	0.552	0.097	0.017	-0.067	0.101	-0.007	0.864
	Wealth Index	0.184	P<.001	0.183	P<.001	0.163	P<.001	0.121	0.003
	Dependency Ratio	0.103	0.011	0.121	0.003	0.112	0.006	0.029	0.477

Significant correlations (P<0.05) are shaded
r=Pearson coefficient
P=2 tailed significance

Modeling CYRM Scores

An initial multivariate linear regression model was run which modeled total

CYRM scores using basic demographic variables as predictors (nationality, gender, age,

vulnerability score, and education level). This model yielded an adjusted $R^2 = .037$ with

nationality, age, and vulnerability score emerging as significant predictors of CYRM

scores (p<0.05). Adding economic indicators to the model (wealth index and dependency

ratio) increased the adjusted R^2 to 0.051. Nationality and vulnerability score lost

significance, while age, wealth index, and dependency ratio emerged as significant

predictors of CYRM Score (P<.05).

A second step was added to the model, which included lifetime exposure to

traumatic events as well as scores from the six measures of mental health, stress and

wellbeing (PSS, Hinsecurity, Hdistress, AYMH, SDQ, CRIES). The inclusion of the

second step collectively increased the model's adjusted R^2 to 0.290. (See Table 3)

Table 3: Building a Multivariate Linear Regression Model of Total CYRM-28 Scores at Baseline Data Collection (N=601[1])

	Adjusted R^2	Predictors	Model A		Model B		Model C	
			β	P	β	P	β	P
Step 1 **a)**	0.037	Nation	-0.118	0.006	-0.23	0.671	-0.028	0.622
		Age	-0.197	0.001	-0.202	0.001	-0.128	0.019
		Gender	0.00	0.991	0.002	0.952	0.036	0.315
		Vulnerability Score	-0.065	0.111	-0.053	0.191	0.003	0.929
		Educational Level	-0.065	0.111	0.121	0.057	0.115	0.037
b)	0.051	Wealth Index			0.124	0.019	0.083	0.072
		Dependency Ratio			0.091	0.029	0.054	0.136
Step 2	0.029	Lifetime Traumatic Events					-0.088	0.116
		PSS					-0.267	P<0.001
		HInsecurity					0.332	P<0.001
		HDistress					-0.156	P<0.001
		SDQ					-0.141	0.001
		CRIES					0.152	0.001

β=Standardized Beta
P=2 tailed Significance
Shaded values are significant predictors (P<0.05)
[1] Total Evaluation Sample N=603, however 2 participants did not complete the CYRM28 Measure
Model A (Step 1a): Basic Demographic Variables added as model predictors
(Nation, Age, Gender, Vulnerability Score, Educational Level)
Model B (Step 1a-b): Basic Demographic Variables and wealth variables added to the model as
predictors (Nation, Age, Gender, Vulnerability Score, Educational Level, Wealth Index, Dependency Ratio)
Model C (Step 1a-b, Step 2): Basic Demographic Variables and Wealth Variables added as a first step, traumatic events
and stress, wellbeing, mental health questionnaires added as a second step in the model
(1. Nation, Age, Gender, Vulnerability Score, Educational Level, Wealth Index,
Dependency Ratio & 2. Lifetime Traumatic Events, PSS, HInsecurity, HDistress, SDQ
and CRIES)

When the model was run using a forward selection method, gender, nationality, vulnerability score, and AYMH score were all excluded as predictors. While AYMH was consequently excluded from the final model, it was determined that gender, nationality, and vulnerability score should remain due to their theoretical importance.

In the final model, age, PSS score, and education level emerged as the three largest significant predictors of total CYRM scores. Human Insecurity scores emerged as the strongest significant predictor in the model, with CYRM scores increasing by .333 points for every point increase in insecurity. PSS scores were the second most important predictor in the model, with CYRM scores decreasing by .270 points for every point increase in PSS. For each of the 3 subscales (Individual, Caregiver and Context), PSS and Human Insecurity consistently emerged as the two strongest predictors of CYRM scores. (See Table 4)

The sample was then divided by nationality and the same 2-step model was used to predict total CYRM scores. Again, Human Insecurity scores and PSS scores were the two strongest predictors of CYRM scores when Syrians and Jordanians were analyzed separately. Among Jordanians, lifetime exposure to traumatic events emerged as a third strong predictor of CYRM scores (Beta=-.241, P<.001. However, among Syrians, lifetime exposure to traumatic events was completely non-predictive of CYRM scores (Beta=0.00, P<0.999).

Subscale Scores by Nationality

Among Jordanians, Human Insecurity and Perceived Stress emerged as the two strongest predictors of Individual and Context Subscale scores. For the Caregiver

Subscale, PSS emerged as the strongest significant predictor (Beta=-0.273, P<0.001). However, lifetime traumatic events (Beta=-0.236, P<0.001), emerged as stronger predictor than Human Insecurity (Beta=0.199, P<0.001).

For Syrians, Human Insecurity and PSS emerged as the strongest predictors of Individual Subscale Scores. For the Caregiver Subscale, age was found to be the strongest predictor of scores (Beta=-0.207, P=0.008), followed by Human Insecurity (Beta=0.191, P<0.001) and PSS (Beta=-0.179, P=0.003). For the Context Subscale, Human Insecurity emerged as the strongest predictor (Beta=-.327, P<0.001), followed by age (Beta=-0.261, P<0.001) and the Strengths and Difficulties Questionnaire Score. (See Table 5)

Table 4:
Multivariate Linear Regression Model of CYRM-28 Scores at Baseline Data Collection N=601[1]

	CYRM Total Score			Adjusted R^2=.290	
Step 1:	b	SE	β	t	P
Gender	1.125	1.118	0.036	1.006	0.315
Age	-1.078	0.459	-0.128	-2.347	0.019
Nation	-0.851	1.726	-0.028	-0.493	0.622
Vulnerability Score[a]	0.119	1.331	0.003	0.090	0.929
Wealth Index[b]	0.463	0.257	0.083	1.799	0.072
Dependency Ratio[c]	1.699	1.137	0.054	1.494	0.136
Highest Educational Level	0.825	0.394	0.115	2.094	0.037
Step 2:					
Number of Traumatic Events	-0.356	0.226	-0.088	-1.574	0.116
PSS	-0.684	0.104	-0.267	-6.591	P<0.001
Hinsecurity	0.235	0.025	0.332	9.271	P<0.001
Hdistress	-0.116	0.032	-0.156	-3.628	P<0.001
SDQ	-0.387	0.111	-0.141	-3.485	0.001
CRIES8	0.185	0.055	0.152	3.348	0.001
	Individual Subscale			Adjusted R^2=.253	
Step 1:	b	SE	β	t	P
Gender	-0.111	0.551	-0.007	-0.201	0.841
Age	-0.070	0.226	-0.017	-0.309	0.757
Nation Vulnerability Score[a]	-1.230	0.850	-0.084	-1.447	0.148
	0.559	0.655	0.031	0.853	0.394
Wealth Index[b]	0.164	0.127	0.062	1.295	0.196
Dependency Ratio[c]	0.806	0.560	0.054	1.439	0.151
Highest Educational Level	0.370	0.194	0.108	1.906	0.057

Step 2:					
Number of Traumatic Events	-0.166	0.111	-0.086	-1.490	0.137
PSS	-0.308	0.051	-0.251	-6.020	P<0.001
Hinsecurity	0.102	0.012	0.300	8.167	P<0.001
Hdistress	-0.056	0.016	-0.156	3.554	P<0.001
SDQ	-0.171	0.055	-0.130	-3.127	0.002
CRIES8	0.106	0.027	0.180	3.882	P<0.001
	Caregiver Subscale Adjusted R^2=.193				
Step 1:	b	SE	β	t	P
Gender	0.214	0.35	0.024	0.611	0.542
Age	-0.352	0.144	-0.143	-2.452	0.014
Nation Vulnerability Score[a]	0.532	0.54	0.059	0.985	0.325
	-0.393	0.416	-0.036	-0.943	0.346
Wealth Index[b]	0.139	0.080	0.086	1.735	0.083
Dependency Ratio[c]	0.778	0.356	0.085	2.186	0.029
Highest Educational Level	0.072	0.123	0.034	0.585	0.559
Step 2:					
Number of Traumatic Events	-0.101	0.071	-0.085	-1.426	0.155
PSS	-0.167	0.032	-0.223	-5.148	P<0.001
Hinsecurity	0.043	0.008	0.206	5.395	P<0.001
Hdistress	-0.025	0.010	-0.115	-2.516	0.012
SDQ	-0.089	0.035	-0.111	-2.574	0.010
CRIES8	0.010	0.017	0.028	0.584	0.560
	Context Subscale Adjusted R^2=.219				
Step 1:	b	SE	β	t	P
Gender	1.037	0.459	0.086	2.259	0.024
Age	-0.660	0.189	-0.200	-3.496	0.001
Nation Vulnerability Score[a]	-0.150	0.709	-0.013	-0.212	0.832
	-0.052	0.546	-0.004	-0.095	0.924
Wealth Index[b]	0.157	0.106	0.072	1.490	0.137

Dependency Ratio[c]	0.095	0.467	0.008	0.204	0.838
Highest Educational Level	0.387	0.162	0.138	2.389	0.017
Step 2:					
Number of Traumatic Events	-0.090	0.093	-0.057	-0.971	0.332
PSS	-0.209	0.043	-0.208	-4.895	P<0.001
Hinsecurity	0.090	0.010	0.326	8.674	P<0.001
Hdistress	-0.034	0.013	-0.117	-2.603	0.009
SDQ	-0.129	0.046	-0.120	-2.828	0.005
CRIES8	0.069	0.023	0.145	3.056	0.002

2-hierarchical model with the following predictors included:
Step 1: Gender, Nation, Age, Vulnerability Score, Wealth Index, Dependency Ratio, Educational Level
Step 2: Number of Traumatic Events, PSS Scores, HInsecurity Scores, HDistress Scores, SDQ Scores, CRIES8 Score
Shaded values are significant predictors at the P<0.05 level
[1] Total Evaluation Sample N=603, however 2 participants did not complete the CYRM28
[a] Vulnerability Scores (composite of mental health and resource scores as assigned by Mercy Corps staff members) were categorized into a bivariate (low-moderate vs. high)
[b] Wealth Index refers to the computed sum of household items (see Methods for more information)
[c] Dependency Ratio refers to the calculated ratio of independents/dependents in the household (See Methods for more information)

Table 5

Multivariate Linear Regression Model of CYRM-28 Scores by Nationality at Baseline Data Collection

	Syrian					Jordanian				
CYRM Total Score	Adjusted R^2=.272					Adjusted R^2=.300				
Step 1:	b	SE	β	t	P	b	SE	β	t	P
Gender	0.739	1.529	0.024	0.483	0.629	0.822	1.675	0.027	0.491	0.624
Age	-1.313	0.558	-0.169	-2.352	0.019	-1.381	0.858	-0.150	-1.610	0.109
Vulnerability Score[a]	0.382	1.674	0.011	0.228	0.819	0.445	2.281	0.010	0.195	0.846
Wealth Index[b]	0.520	0.351	0.075	1.481	0.140	0.648	0.384	0.087	1.688	0.093
Dependency Ratio[c]	2.225	1.675	0.066	1.329	0.185	1.017	1,545	0.034	0.659	0.511
Highest Educational Level	0.683	0.463	0.103	1.475	0.141	1.275	0.782	0.151	1.632	0.104

	b	SE	β	t	P	b	SE	β	t	P
Step 2: Number of Traumatic Events	P<0.001	0.258	0.000	0.001	0.999	-2.150	0.554	-0.249	-3.878	P<0.001
PSS	-0.633	0.145	-0.241	-4.352	0.000	-0.759	0.151	-0.300	-5.027	P<0.001
Hinsecurity	0.231	0.036	0.317	6.388	0.000	0.217	0.037	0.320	5.945	P<0.001
Hdistress	-0.094	0.040	-0.134	2.337	0.020	-0.138	0.054	-0.164	-2.569	0.011
SDQ	-.551	.155	-0.199	3.553	P<0.001	-0.224	0.161	-0.084	-1.395	0.164
CRIES8	0.243	0.072	0.179	3.361	0.001	0.254	0.94	0.171	2.695	0.007
Individual Subscale	Adjusted R^2=.223					Adjusted R^2=.230				
Step 1:	b	SE	β	t	P	b	SE	β	t	P
Gender	-0.244	0.783	-0.016	-0.3111	0.756	-0.369	0.802	-0.019	-0.335	0.738
Age	-0.063	0.286	-0.016	-0.222	0.825	-0.361	0.411	-0.086	-0.879	0.380
Vulnerability Score[a]	0.635	0.857	0.038	0.741	0.459	0.595	1.092	0.030	0.545	0.536
Wealth Index[b]	0.168	0.180	0.049	0.931	0.353	0.222	0.184	0.066	1.209	0.228
Dependency Ratio[c]	1.110	0.857	0.067	1.295	0.196	0.444	0.74	0.032	0.6	0.549
Highest Educational Level	0.297	0.237	0.090	1.252	0.211	0.663	0.334	0.172	1.773	0.077
Step 2: Number of Traumatic Events	-0.077	0.132	-0.034	-0.586	0.559	-0.678	0.265	-0.172	-2.555	0.011
PSS	-0.330	0.074	-0.254	-4.436	P<0.001	-0.286	0.072	-0.248	-3.954	P<0.001
Hinsecurity	0.099	0.019	0.274	5.346	P<0.001	0.096	0.017	0.310	5.477	P<0.001
Hdistress	-0.042	0.021	-0.122	-2.052	0.041	-0.073	0.036	-0.190	-2.840	0.005
SDQ	-0.243	0.079	-0.177	-3.063	0.002	-0.096	0.077	-0.079	-1.248	0.213
CRIES8	0.121	0.037	0.180	3.268	0.001	0.133	0.045	0.197	2.963	0.003
Caregiver Subscale	Adjusted R^2=.152					Adjusted R^2=.247				
Step 1:	b	SE	β	t	P	b	SE	β	t	P
Gender	0.050	0.496	0.005	0.100	0.920	0.257	0.500	0.029	0.515	0.607
Age	-0.482	0.181	-0.207	-2.663	0.008	-0.297	0.256	-0.112	-1.161	0.247
Vulnerability Score[a]	-0.245	0.543	-0.024	-0.451	0.652	-0.441	0.681	-0.036	-0.647	0.518
Wealth Index[b]	0.167	0.114	0.080	1.462	0.145	0.188	0.115	0.088	1.638	0.103
Dependency Ratio[c]	0.842	0.543	0.083	1.550	0.122	0.677	0.461	0.078	1.467	0.144

	b	SE	β	t	P	b	SE	β	t	P
Highest Educational Level	0.052	0.150	0.026	0.346	0.729	0.114	0.233	0.047	0.489	0.625
Step 2:										
Number of Traumatic Events	0.008	0.084	0.006	0.091	0.928	-0.586	0.165	-.236	-3.541	P<0.001
PSS	-0.141	0.47	-0.179	2.994	0.003	-0.198	0.045	-.273	-4.400	P<0.001
Hinsecurity	0.042	0.012	0.191	3.570	P<0.001	.039	0.011	.199	3.556	P<0.001
Hdistress	-0.019	0.013	-0.089	-1.437	0.152	-0.033	0.016	-0.134	-2.034	0.043
SDQ	-0.127	0.050	-0.153	-2.526	0.012	-0.057	0.048	-0.074	-1.192	0.234
CRIES8	0.033	0.023	0.081	1.408	0.160	0.018	0.028	0.043	0.658	0.511
Context Subscale	Adjusted R²=.233					Adjusted R²=.222				
Step 1:	b	SE	β	t	P	b	SE	β	t	P
Gender	0.959	0.595	0.083	1.611	0.108	0.836	0.727	0.066	1.149	0.252
Age	-0.770	0.217	-.262	-3.543	P<0.001	-0.727	0.373	-0.191	-1.950	0.052
Vulnerability Score[a]	-0.013	0.651	-0.001	-0.020	0.984	0.291	0.991	0.016	0.294	0.769
Wealth Index[b]	0.182	0.137	0.069	1.327	0.186	0.240	0.167	0.078	1.435	0.152
Dependency Ratio[c]	0.239	0.652	0.019	0.367	0.714	-0.113	0.671	-0.009	-0.168	.867
Highest Educational Level	0.338	0.180	0.135	1.879	0.061	0.500	0.339	0.144	1.472	0.142
Step 2:										
Number of Traumatic Events	0.070	0.100	0.041	0.699	0.485	-0.889	0.241	-0.250	-3.694	P<0.001
PSS	-0.159	0.057	-0.160	-2.819	0.005	-0.275	0.066	-0.264	-4.195	P<0.001
Hinsecurity	0.090	0.014	0.327	6.421	P<0.001	0.082	0.016	0.295	5.190	P<0.001
Hdistress	-0.033	0.016	-0.123	-2.087	0.038	-0.031	0.023	-0.090	-1.343	0.180
SDQ	-0.183	0.060	-0.174	-3.024	0.003	-0.073	0.070	-0.067	-1.049	0.295
CRIES8	0.089	0.028	0.172	3.151	0.002	0.102	0.041	0.167	2.505	0.013

2-hierarchical model with the following predictors included:

Step 1: Gender, Age, Vulnerability Score, Wealth Index, Dependency Ratio, Educational Level

Step 2: Number of Traumatic Events, PSS Scores, HInsecurity Scores, HDistress Scores, SDQ Scores, CRIES8 Score

Shaded values reflect significant predictors at the P<0.05 level

[1] Total Evaluation Sample N=603, however 2 participants had missing CYRM Scores

[a] Vulnerability Scores (composite of mental health and resource scores as assigned by Mercy Corps staff members) were categorized into a bivariate (low-moderate vs. high)

[b] Wealth Index refers to the computed sum of household items (see Methods for more information)

[c] Dependency Ratio refers to the calculated ratio of independents/dependents in the household (See Methods for more information)

Discussion

Validation of the CYRM-28 Structure

The use of the CYRM questionnaire within the sample population generally fit the expected 3-factor structure, with the exception of 7 items that deviated from their predicted subscale. It is difficult to draw strong conclusions based around these 7 deviating items. 6 of these items did load partially onto their intended subscale, despite loading more strongly onto a different subscale. By contrast item 19: "I am treated fairly by my community," loaded strongly onto the individual subscale and not at all onto the predicted subscale (Context). This may be a particularly salient item in light of recent reports of increasing tensions between Jordanians and Syrians. It is possible that the 7 unexpected item loadings were due to problems in translating the questionnaire into Arabic or, rather, it may be due to implementation problems. Alternatively they may reflect a true difference with respect to the functionality of the CYRM-28 within the Jordanian-Syrian sample.

Resilience and Demographic Variables

Collectively, demographic variables (including nationality, age, gender, vulnerability score, educational level, wealth index and dependency ratio) were weak predictors of CYRM scores, as compared with stress and mental health measures. In the final model, education level (discussed below) and age were the only demographic variables that retained significance as predictors of overall scores, with age.

Resilience, Wealth and Education:

Wealth and education levels had been hypothesized to have a positive relationship with resilience scores. While initial correlations were suggestive of a positive relationship between wealth and resilience, this relationship largely disappeared in the final model. The lack of a strong finding with respect to household wealth and resilience does not by itself invalidate a relationship between these variables, however more research is needed to clarify these connections.

As predicted, a significant positive relationship between education level and CYRM scores remained in the final model. While Ungar (2004) clarifies that education is not inherently a factor which improves resilience in every context, this finding is at the very least suggestive of a positive relationship between education and resilience in a Syrian-Jordanian context which may have implications for humanitarian workers in the region.

Resilience and Nationality:

A significant difference in CYRM scores between Syrians and Jordanians was hypothesized. While initial testing implied a significant relationship between nationality and CYRM scores, nationality lost its significance as a predictor of CYRM scores as soon as the wealth index and dependency ratio variables were added to the model, suggesting that wealth and economic indicators may determine differences by nationality.

Resilience, Stress and Insecurity

A non-linear multidimensional relationship between resilience and measures that address aspects of mental health, stress, distress and wellbeing was hypothesized. The Perceived Stress Scale and Human Insecurity Index emerged as the strongest predictors of CYRM scores for the overall sample and by nationality. Perceived stress demonstrated a negative relationship with CYRM scores, with higher stress scores being associated with lower resilience scores. Given the close conceptual link between resilience processes and stressful situations, it is not entirely unexpected that perceived stress would have an important impact on resilience. However, it does underscore the importance of stress reduction as a key component in interventions that aim to improve resilience among adolescents.

More surprising was the discovery of a strong, positive relationship between Human Insecurity scores and CYRM scores. As with stress, the relationship between insecurity and resilience remained for every subscale and nationality subgroup, confirming the robustness of the finding within this sample. It may be that experiences of insecurity offer youth more opportunities to practice resilience processes (e.g. successfully navigating towards health resources in the community). Further research should aim to clarify this unexpected relationship.

Resilience and Lifetime Exposure to Traumatic Events

Lifetime exposure to traumatic events was a non-significant predictor of CYRM scores for the total sample and completely non-predictive for Syrians alone. However, a strong relationship emerged between exposure to traumatic events and resilience within

the Jordanian subgroup, where more traumatic events were associated with lower CYRM scores. As Syrians on average experienced significantly higher levels of traumatic events as compared with Jordanians, it may be that the relative impact of additional traumatic events is greater in Jordanians than in Syrians. Alternatively, there may have been a qualitative difference between the types of events experienced by Jordanians as compared to Syrians with consequent effects on resilience levels. The strength of lifetime traumatic events as a predictor of Jordanian scores on the CYRM Caregiver Subscale suggests that Jordanians may be experiencing traumas related to the family, whereas Syrians are more likely experiencing traumas related to political violence and displacement. However, further research should be conducted to investigate this difference.

Conclusion

The 3-factor structure for the CYRM-28 identified by Liebenberg et al. (2012) was generally confirmed for use within the Syrian and Jordanian sample. Baseline CYRM scores suggested that demographic variables, including nationality, wealth and education may have a small positive association with resilience. However, aspects of mental health, stress, insecurity and distress and wellbeing collectively appear drive resilience scores to a much greater degree. In particular, lower levels of perceived stress and higher levels of insecurity emerged as strong predictors of high resilience levels across both nationality groups. Finally, while lifetime exposure to traumatic events emerged as an important predictor of lower resilience scores among Jordanians, it had no predictive power among Syrians.

The strength of perceived stress as a predictor of resilience scores reaffirms the importance of the "No Lost Generation" Program as an intervention designed to reduce stress and increase social support among adolescent participants. However, the implications for practice of a positive relationship between insecurity and resilience are less immediately clear. Also unclear are the implications of the finding that the relationship between resilience and lifetime traumatic events may function differently between Syrians and Jordanians. Further research is necessary to clarify the relationship between insecurity, exposure to trauma and resilience within conflict settings before conclusions can be drawn.

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