Psychiatry Research 309 (2022) 114424

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

Associations of anxiety and depression with suicide experiences in individuals with and without childhood trauma: The role of social support

Ioannis Angelakis [a,*], Patricia Gooding [b,c]

[a] University of South Wales, School of Psychology, Pontypridd, Wales, CF37 1DL, UK
[b] Division of Psychology and Mental Health, School of Health Sciences, Faculty of Biological, Medical and Health Sciences, University of Manchester, UK
[c] Manchester Academic Health Science Centre, MAHSC, UK

ARTICLE INFO

Keywords:
Childhood sexual abuse
Childhood physical abuse
Depression
Anxiety
Perceived social support

ABSTRACT

No studies have examined the differences and similarities between individuals with and without experiences of childhood sexual and/or physical abuse in relation to anxiety and depression severity, perceived social support, and suicide experiences. Furthermore, whether the strength of these associations differs between these two groups, and whether the buffering role of perceived social support is equally effective, remain unknown. This study, which was based on 842 British participants, aimed to address these gaps. There were three key findings: i) abused individuals reported significantly more severe depression, anxiety, and suicide experiences, and lower social support, ii) the associations between depression, anxiety, and suicide experiences did not differ between these groups, whereas the association between social support and suicide experiences was more pronounced in abused individuals, and iii) perceived social support acted as a moderator of the association between depression and suicide experiences in both groups. These findings are important because they suggest that for the individuals with childhood trauma perceptions of being less supported by their significant others may lead to suicide acts. Furthermore, perceptions of being socially supported appeared to weaken the association between depression and suicide experiences equally in individuals with and without childhood trauma.

Epidemiological studies suggest that between 11.6% and 18% of the general population in the United States have experienced childhood maltreatment, in the form of sexual and/or physical abuse (Merrick et al., 2018). In the United Kingdom, the prevalence estimates of those who disclose childhood sexual or physical abuse range between 9.6% and 17.6% respectively (Office for National Statistics, 2020). Experiencing abuse as a child may have detrimental consequences on mental health that can persist into adulthood (McLaughlin, et al., 2012; McLaughlin, et al., 2013). For example, Gardner and colleagues (2019) found that people who have been sexually and/or physically abused in childhood were twice as likely to develop depression and/or anxiety. Furthermore, those people who have been sexually abused as children were 3.5 times more likely to engage in suicide thoughts and/or attempts in puberty (Angelakis et al., 2020a) and/or adulthood (Angelakis et al., 2019), whereas those who have been physically abused were twice as likely to engage in such acts. Currently, the differences and similarities between those individuals with and without experiences of childhood abuse with respect to having mental health problems of depression, anxiety and/or suicide thoughts and behaviors in adulthood is unknown. It is, clearly, important to determine this to develop specific and effective therapies. The first aim of the current study was to redress this gap.

There is a robust literature documenting the unfavorable consequences of a perceived lack of social support from communities, family members and peer groups on mental health problems (e.g., Afifi et al., 2009; Angelakis et al., 2018; Angelakis and Gooding, 2020a, b). Equally, there is a strong literature demonstrating the positive effects of perceived social support on mental health problems, including depression, anxiety, and suicide experiences (Gooding et al., 2013, 2019; Hefner and Eisenberg, 2009; Owen et al., 2015; Prati and Pietrantoni, 2010). Perceived social support is defined as the beliefs and/or expectations of the person that their social network, including their peers, and/or family members and significant others, will stand by themselves when they need them (Barrera, 1988). The positive effects of the perceived social support on those individuals who have experienced childhood trauma have also been documented (Evans et al., 2013; Logan-Greene et al., 2014). In accord with the stress buffering model, the person who has been abused and/or neglected tends to either regard

* Corresponding author.
E-mail address: ioannis.angelakis@southwales.ac.uk (I. Angelakis).

https://doi.org/10.1016/j.psychres.2022.114424
Received 8 March 2021; Received in revised form 26 January 2022; Accepted 28 January 2022
Available online 30 January 2022

life adversities as less negative when they feel being supported from their significant others, and/or reappraise such stressful events as more positively (e.g., Cohen and Willis, 1985; Williams and Joseph, 1999). However, there is a gap in the literature which is that the extent to which relationships between depression, anxiety, suicide thoughts and behaviors, and perceptions of social support differ between adults who have, and have not, experienced physical and/or sexual abuse in childhood is unknown. Addressing this gap was the second aim of the current study.

A growing evidence base has developed our knowledge of the role of perceived social support in mitigating mental health problems by examining the extent to which perceptions of social support can weaken relationships between mental health problems and suicide thoughts and behaviors (e.g., Johnson et al., 2011; Southwick et al., 2016). That is, such studies look at whether social support can act as a buffer or a protective resilience factor. For example, in people with non-affective psychosis, social support weakened the relationship between hopelessness and suicide ideation (Johnson et al., 2010); social support was also found to buffer the impact of PTSD on suicide behaviors (Panagioti et al., 2014); and in a study using epidemiological data social support buffered a relationship between negative stressful life events and hopelessness (Tham et al., 2020). Although this literature base is expanding, a key gap exists which is that the extent to which social support can buffer the relationships between depression, anxiety, and suicide thoughts and behaviors in adults who have, and have not experienced child sexual or physical abuse is unknown. The third aim of the current study was to address this gap.

Overall, there were five key predictions. First, that anxiety and depression severity, and suicide thoughts and behaviors, would differ between people with and without experiences of childhood sexual and/or physical abuse with frequency being significantly greater in those who had experienced child abuse. Second, perceived social support in adulthood would be stronger in participants who had not experienced child abuse compared to those who had reported these experiences. Third, there would be stronger associations between anxiety, depression, and suicide experiences in those who had disclosed childhood physical/sexual abuse compared to those who had not made any such disclosures. Fourth, there would be a stronger negative relationship between social support and suicide experiences in those who had not disclosed child abuse. Fifth, social support would act as a buffer for the relationships between depression, anxiety, and suicide experiences, and that these effects would be stronger in those reporting child abuse compared to those participants who had not experienced childhood abuse.

1. Methods

1.1. Data collection

The data for this study were collected from January 31, 2019 to August 31, 2019 using a web-based survey. This method was preferred because it i) encourages participation, and ii) facilitates the reporting of any sensitive and/or stigmatized experiences and/or behaviors encountered by the individual, including exposure to aversive events during childhood and/or mental health problems (Kays et al., 2012).

1.2. Participants & procedure

The study sample comprised two groups of participants with and without experiences of childhood sexual and/or physical abuse. Potential participants were recruited through social media, including Facebook, Instagram, and Twitter. The eligibility criteria were i) 18 or older, ii) ability to read and write in English, and iii) willingness to provide an informed consent. Those who met all the study criteria were asked to complete on-line a series of self-report questionnaires, after being informed that their participation was anonymous. All participants were debriefed online regarding the full purposes of the study upon completion of the study protocol. They also were provided with information about mental health charities (e.g., Samaritans) that they could contact in case that they felt that they were affected by their participation in the study. The study was approved by the ethics committee of the University of South Wales (Reference number: 1.905.172.1).

1.3. Design

This study had a cross-sectional design. The study sample was split in two groups of individuals based on the presence or not of experiences of sexual and/or physical abuse before the age of 18. Anxiety and depression severity scores in addition to social support scores were the predictor variables. Suicide thoughts and behaviors were the outcome variable. The interaction terms between symptoms of anxiety, depression, and perceived social support served as the moderator variables.

1.4. Instruments

Childhood adversities. Two items assessed experiences of sexual and physical abuse during childhood. The question that assessed sexual abuse was: "Have you ever had any traumatic sexual experiences (e.g., molestation, rape etc.) before the age of 18?". The question that assessed physical abuse was: "Have you ever been seriously hit, kicked, slapped, punched, burned, mugged and/or assaulted in any other way before the age of 18?". Each of these questions were answered "no" or "yes".

center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). The measure comprises 20 self-report items that assess the severity of depressive symptoms during the past week. Examples include "*I felt depressed*", "*I had crying spells*", and "*I felt sad*". A four-point scale is used that ranges from 1 = *rarely* to 4 = *most of the time*. The scale has very good to excellent psychometric properties and the Cronbach's alpha index was as high as 0.95. The alpha coefficient for this sample was 0.95.

Self-Rating Anxiety Scale (SAS; Zung, 1971). This scale has 20 self-report items that assess severity of anxiety symptoms during the several past days. Examples of anxious experiences include "*I can feel my heart beating fast*", "*My face gets hot and blushes*", "*I have nightmares*". The scale also includes five experiences reflecting a lack of anxiety, including, "*I feel calm and can sit still easily*", "*I can breathe in and out easily*", which are reverse scored. It uses a 4-point scale to rate responses that range from 1 = *rarely* to 4 = *most of the time*. The scale has very good to excellent psychometric properties and the Cronbach's alpha index was as high as 0.82 (Tanaka-Matsumi and Kameoka, 1986). The alpha coefficient for this sample was 0.90.

Suicidal Behaviors Questionnaire Revised (SBQ-R; Osman et al., 2001). This questionnaire has four self-report items that assess levels of lifetime suicide thoughts and behaviors (item 1; "*Have you ever thought about or attempted to kill yourself ?*"), frequency of suicide ideation in the past year (item 2; "*How often have you thought about killing yourself in the past year ?*"), communication of the intention to die by suicide (item 3; "*Have you ever told someone that you were going to commit suicide, or that you might do it ?*"), and the likelihood of death by suicide in the future (item 4; "*How likely is it that you will attempt suicide someday?*"). Cronbach's alpha indices of 0.76 and 0.88 in non-clinical and clinical samples respectively have been reported during the initial study development. The alpha coefficient for this sample was 0.87.

Multidimensional Scale of Perceived Social Support (MSPSS; Bruwer et al., 2008). This scale has 12 items that assess perceived social support from three different sources, including friends, family members, and significant others. Examples include, "*There is a special person who is around when I am in need*", "*My family really tries to help me*", "*I can count on my friends when things go wrong*". It uses a 7-point scale to rate responses that range from 1 = *very strongly disagree* to 7 = *very strongly agree*. The scale has very good psychometric properties, with the Cronbach's alpha index being as high as 0.86. The alpha coefficient for this

sample was 0.90.

1.5. Data analyses strategy

Statistical analyses were conducted in Stata 15® (StataCorp LP, USA). All variables were tested for multivariate normality using the *mvtest norm* command and showed that normality was not present for any of the continuous variables (StataCorp., 2019). To test the first two predictions, which were that the frequency of anxiety, depression and suicide thoughts and behaviors would be significantly greater in those who had experienced child abuse, and lower for the perceived social support, we performed Kruskal-Wallis tests, after splitting our sample in those with and without experiences of childhood trauma. We used chi-square tests to examine whether our split sample differed on basic demographic information, including gender, education level, occupation, and socioeconomic status. We conducted a two-step hierarchical regression analysis with 5000 bootstrapped iterations, which corrects biased standard errors. First, the variables assessing anxiety and depression severity, and social support scores were entered into step 1. To test the third prediction, which was that there would be stronger associations between anxiety, depression and suicide thoughts and behaviors in those disclosing experiences of childhood abuse, we compared whether the regression coefficients of these associations differed between the two groups of participants by conducting Wald chi-square tests with the *suest* command. To test the fourth prediction, which was that there would be stronger negative associations between perceived social support, and suicide thoughts and behaviors, we compared the regression coefficients of these relationships for the two groups by performing Wald chi-square tests with the *suest* command. Then, we entered the interaction terms of perceived social support with each of the variables assessing anxiety and depression severity into step 2. Any significant interactions contributing to the variance of the suicide thoughts and behaviors demonstrated that perceived social support moderated the associations of anxiety and depression with suicide thoughts and behaviors (Cohen and Cohen, 1983). The fifth prediction was examined by performing Wald chi-square tests with the *suest* command that compared whether the regression coefficients of the interaction terms between perceived social support scores, anxiety, and depression severity differed in those with and without experiences of child abuse. We plotted the produced regression coefficients of anxiety and depression severity, perceived social support together with those for the interaction terms between anxiety, depression and perceived social support with suicide thoughts and behaviors by using the *coefplot* command. To avoid multi-collinearity, all variables were standardized.

2. Results

2.1. Participant characteristics

The study sample comprised 842 adults, of whom 260 (30.9%) self-reported experiences of childhood abuse before the age of 18. In particular, 121 (14.4% of the total sample) respondents reported experiences of sexual abuse, 88 (10.5% of the total sample) reported experiences of physical abuse, and the remaining 51 (6.1% of the total sample) disclosed being victims of both sexual and physical abuse. Demographic information together with the scores of both groups on anxiety and depression severity, suicide thoughts and behaviors, and perceived social support scores are presented in Table 1.

2.2. Main comparisons between those with and without experiences of childhood abuse

No differences were observed regarding the demographic variables of age, sex, educational level, and occupation between the two groups. The first and second predictions were that anxiety and depression severity, and suicide thoughts and behaviors would be significantly greater, whereas perceived social support scores would be significantly lower in those people reporting child abuse. In accord with these predictions, Kruskal-Wallis tests demonstrated that those individuals reporting childhood physical and/or sexual abuse had more severe self-reported anxiety $x^2(1, N = 842)=38.12$, $p < 0.001$ and depression $x^2(1, N = 842)=41.47$, $p < 0.001$ as well as more suicide thoughts and behaviors $x^2(1, N = 842)=75.25$, $p < 0.001$, and lower social support scores $x^2(1, N = 842)=18.67$, $p < 0.001$.

Table 1
Descriptive and clinical characteristics of the study samples ($N = 842$).

	Individuals with experiences of sexual and/or physical abuse		No abused Individuals		Comparisons		
	N	%	*N*	%	X^2*	*df*	*P*
	260	30.9	582	69.1			
Type of abuse							
Sexual abuse	121	14.4	-	–			
Physical abuse	88	10.5	–	–			
Combined abuse	51	6.1	–	–			
Sex							
Male	40	15.4	111	19.1			
Female	220	84.6	471	80.9	1.66	1	0.20
Educational Level							
None/Primary school	37	14.2	76	13.1			
Secondary school	59	22.7	132	22.7			
College/University	164	63.1	374	64.3	0.22	2	0.89
Occupation							
Employed	163	62.7	362	62.2			
Unemployed	35	13.5	58	70.7			
Student	35	13.5	101	17.4			
Student/Employee	27	10.4	61	10.5	3.68	3	0.30
	M	*SD*	*M*	*SD*			
Age	35.78	12.65	33.46	12.53	7.74	1	0.05
Symptoms of anxiety (SAS)	24.48	12.62	18.61	10.95	38.12	1	0.001
Symptoms of depression (CESD)	27.80	14.77	20.66	13.76	41.47	1	0.001
Suicide ideation/ behaviors (SBQ)	5.84	5.05	2.91	3.83	75.25	1	0.001
Perceived social support (MSPSS)	47.64	16.73	52.85	15.00	18.67	1	0.001

Note. N = sample size, M = Mean, SD = Standard deviation, SAS = Self-report Anxiety Scale, CESD = Centers for Epidemiological Studies-Depression, SBQ = Suicidal Behaviors Scales-Revised, MSPSS = Multidimensional Scale of Perceived Social Support.
* Gender, Place of residence, educational level and occupation were compared using Chi-square test; All other variables were compared using Kruskal-Wallis test.

2.3. Associations of anxiety, depression, perceived social support with suicide thoughts/behaviors between those with and without experiences of childhood abuse

The associations of anxiety and depression, and perceived social support with suicide ideation and behaviors were analyzed by running a hierarchical regression analysis (see Table 2). First, anxiety and depression, and social support scores were entered at step 1. The overall model was significant and explained an important proportion of variance in suicide thoughts and behaviors, $R^2 = 0.39$, $F(3, 838) = 178.71$, $p < 0.001$. Our third and four predictions were that the associations between anxiety and depression scores, and suicide thoughts and behavior would be greater in those with experiences of childhood abuse than those without similar experiences. To examine these predictions, we performed three separate Wald chi-square tests. Results demonstrated that there were no any significant differences for the coefficients for anxiety [$x^2(1, N = 842) = 2.37$, $p = 0.12$] and depression [$x^2(1, N = 842) = 3.05$, $p = 0.08$], which contradicted our third prediction. The

Table 2
Results from the bootstrapped hierarchical regression analyses examining self-reported anxiety and depression severity, perceived social support, and the interaction terms between anxiety, depression and perceived social support as predictors of suicide thoughts and behaviors ($N = 842$).

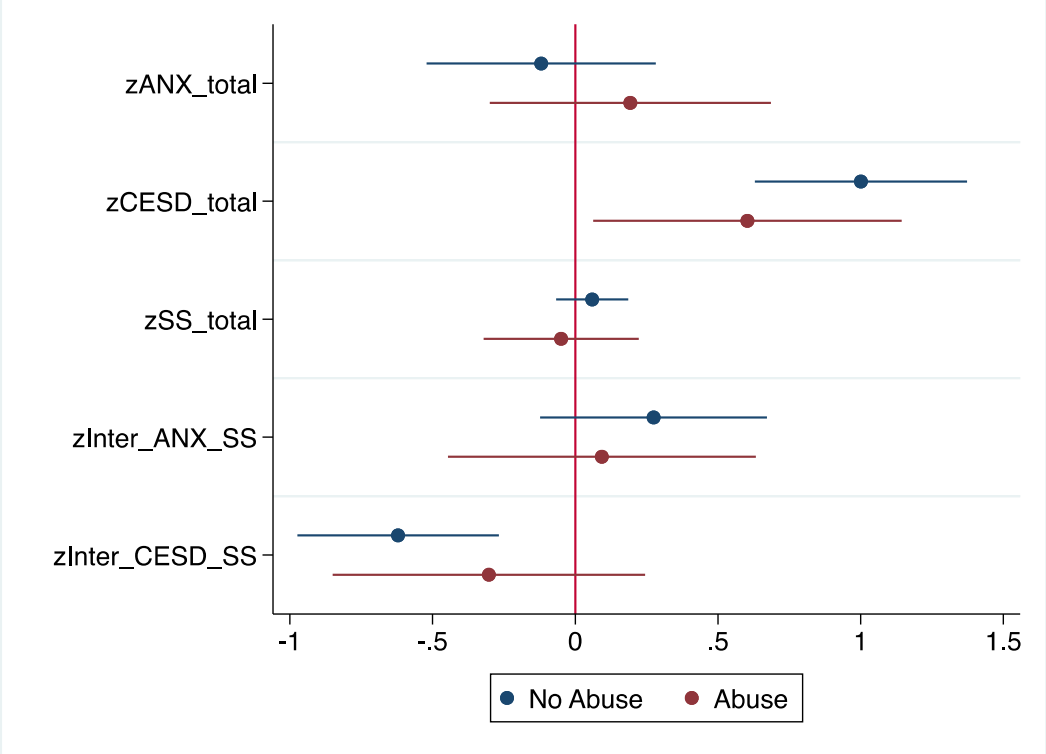
Step	Variables	*b* (SE)	*P* value	Total $R^2(f^2)$	*P* value	$\Delta R^2(f^2)$	*P* value
1	Anxiety	0.22 (0.05)	<0.001				
	Depression	0.36 (0.05)	<0.001				
	Perceived Social Support	−0.15 (0.03)	<0.001	0.39(0.64)	<0.001	–	–
2	Anxiety	0.10 (0.15)	0.45				
	Depression	0.86 (0.16)	<0.001				
	Social Support	0.06 (0.06)	0.26				
	Anxiety x Perceived Social Support	0.13 (0.16)	0.43				
	Depression x Perceived Social Support	−0.50 (0.15)	<0.001	0.41 (0.69)	<0.001	0.02 (0.02)	<0.001

Note: SE = Standard Error.

coefficient for the perceived social support [$x^2(1, N = 842) = 4.08$, $p = 0.04$] was lower for those individuals reporting childhood sexual and/or physical abuse (see also Fig. 1) supporting our fourth prediction.

2.4. The buffering role of the perceived social support in the associations of anxiety and depression with suicide thoughts and behaviors between those with and without experiences of childhood abuse

The fifth prediction was that social support would act as a buffer for the associations between anxiety, depression, and suicide thoughts and behaviors, and that this effect would be stronger for those people disclosing experiences of childhood abuse. To examine this prediction, the interaction terms between anxiety and suicide experiences, and between depression and suicide experiences were entered into the regression analysis as detailed in Table 2. The overall model was significant and explained an important proportion of variance in suicide thoughts and behaviors, $R^2 = 0.41$, $F(5, 836) = 114.94$, $p < 0.001$. In model 2, depression severity ($p < 0.001$) and the interaction term between depression and social support were significant ($p < 0.001$), whereas lack of social support ($p = 0.32$), anxiety severity ($p = 0.53$) and the interaction between social support and anxiety ($p = 0.41$) did not predict suicide thoughts and behaviors above and beyond depression and its interaction with social support. This means that depression was the only significant predictor of suicide thoughts and behaviors, and that social support moderated this relationship. Furthermore, we performed two separate Wald chi-square tests to examine whether the coefficients for the interaction terms between anxiety and social support, and between depression and social support differed between those with and without experiences of childhood abuse. Results demonstrated that there were not any significant differences for the coefficients for the interaction term between anxiety and social support [$x^2(1, N = 842) = 1.12$, $p = 0.29$] nor for the interaction term between depression and



Note. zANX_total = anxiety severity, zCESD_total = depression severity, zSS_total = perceived social support, zInter_ANX_SS = interaction term between anxiety and social support, zInter_CESD_SS = interaction term between depression and social support.

Fig. 1. Plotted regression coefficients of anxiety and depression severity, perceived social support together with those for the interaction terms between anxiety, depression and perceived social support with suicide thoughts and behaviors between those with and without experiences of childhood abuse.
Note. zANX_total = anxiety severity, zCESD_total = depression severity, zSS_total = perceived social support, zInter_ANX_SS = interaction term between anxiety and social support, zInter_CESD_SS = interaction term between depression and social support.

social support [$x^2(1, N = 842) = 0.88$, $p = 0.35$] for these two groups which partially contradicted our fifth prediction.

3. Discussion

The current study demonstrated that 30.9% of a British sample examined had experienced sexual and/or physical abuse by the age of 18 years old. In particular, the percentage of those respondents who had experienced sexual, physical and/or combined abuse was 14.4%, 10.5%, and 6.1% respectively. This finding is consistent with the latest update of the prevalence estimates of the experiences of sexual and/or physical abuse in England and Wales. For example, according to the Office for the National Statistics (2020), the percentage of those individuals who disclosed experiences of sexual and physical abuse by the age of 16 was 17.6% and 9. 6% respectively, whereas a percentage of 1.7% individuals disclosed experiences of combined physical and sexual abuse. These results are also in accord with the existing literature suggesting that at least half of all children in the United States will experience some form of adversity, including any form of abuse and neglect by the age of 18 (McLaughlin et al., 2013). With regard to the demographic characteristics of our sample, no significant differences were found in demographic variables between those individuals with and without experiences of childhood sexual and/or physical abuse.

In accord with the first two predictions, our analyses showed that the severity of self-reported anxiety and depression, and suicide thoughts and behaviors was significantly higher for those individuals reporting experiences of childhood abuse compared to those without similar experiences. This finding is consistent with the literature indicating that children who have experienced abuse have an increased probability of developing mental health problems (McLaughlin et al., 2012), including suicide thoughts and behaviors compared to those children without similar experiences (Angelakis et al., 2019; Angelakis et al., 2020a). We also found that individuals with experiences of childhood sexual and/or physical abuse reported that they felt less supported from their significant others compared to those without these sorts of experiences. This result is consistent with previous findings suggesting that individuals with experiences of childhood trauma tended to report less social support and face-to-face contact with their family members than those without childhood trauma (Trauelsen et al., 2016).

The results from the regression analyses demonstrated i) positive relationships between anxiety and depression severity, and suicide thoughts and behaviors, and ii) an inverse relationship between perceived social support, and suicide thoughts and behaviors. In contrast to our third prediction, which was that the associations between anxiety, depression and suicide experiences would be stronger for those individuals reporting experiences of childhood sexual and/or physical abuse than those without similar experiences, our analyses did not show any differences between these two groups. However, and in accord with our fourth prediction, we found that the negative association between perceived social support, and suicide thoughts and behaviors was more pronounced for those individuals with experiences of child abuse than those without. These findings support and extend the growing literature in at least two unique ways. First, these results extended previous findings by demonstrating that the robustness of the associations between anxiety, depression, and suicide thoughts and behaviors is not exclusively observed in those individuals with experiences of childhood sexual and/or physical abuse, but also in those without these sorts of experiences. Therefore, people reporting mental health problems, such as anxiety and/or depression, may be more prone to engaging in suicide acts regardless of whether they have experienced a history of abuse as children. Second, and most importantly, our pattern of results demonstrated that sexually and/or physically abused respondents reporting being significantly less supported by their significant others had an elevated risk for engaging in suicide thoughts and behaviors compared to those individuals without similar experiences. Consistent with our findings, the study of Runsten et al. (2014) found that social support appeared to be affected by the number of adversities experienced during childhood, whereas the study of Matel-Anderson (2019) found a direct, and indirect through self-esteem, effect of social support on suicide resilience in college students. These findings highlight an urgent need to increase social support in those individuals who have experienced sexual and/or physical abuse because their disrupted social support networks may lead to suicide experiences (e.g., Chen et al., 2020). However, additional research is warranted in identifying the exact mechanisms through which lack of social support leads to suicide thoughts and behaviors in individuals with childhood trauma.

The fifth and final prediction was that perceived social support would moderate the relationships between anxiety, depression and suicide experiences, and that social support would act as a stronger buffer for these relationships in those individuals with and without experiences of childhood abuse. There were two important findings. First, only symptoms of depression and the interaction term between depression and social support were significantly associated with suicide thoughts and behaviors. This means that perceived social support moderated the association between depression, and suicide thoughts and behaviors, whereas anxiety did not predict suicide-related experiences above and beyond those of depression. The latter finding is in accord with the study of Bentley et al. (2016) which suggested that anxiety had a weak ability to predict suicide thoughts and behaviors. Second, and most importantly, we did not find evidence to support the differential reduction of the association between depression and suicide experiences in those individuals with and without experiences of childhood abuse. This means that perceived social support can serve as an effective protective variable against suicide thoughts and behaviors in those with depression regardless of whether they had experienced traumatic events in childhood (e.g., Xie et al., 2018). This is a clinically important finding because it highlights the direct and transdiagnostic buffering effect of perceived social support against suicide thoughts and behaviors regardless of whether the individual has experienced sexual and/or physical abuse as a child.

3.1. Limitations

There were six limitations that warrant discussion. First, this study used a cross-sectional design and, as such, no temporal precedence is implied. However, the current study extends the limited literature which examines protective factors that mitigate suicide acts in individuals with and without experiences of childhood sexual and/or physical abuse (e.g., Trauelsen et al., 2016). Future studies should also examine additional protective factors that buffer suicide-related behaviors, including effective clinical care for mental health (Siegmann et al., 2019), and active problem solving-skills (Linda et al., 2012), and examine whether these factors differ between individuals with and without childhood adversities. Second, this study used the overall suicide scores from the revised questionnaire measuring suicide behaviors (Osman et al., 2001). This decision was largely based on the argument that suicide behaviors are considered to gradually evolve from thoughts and suicide plans to attempts (Mann et al., 1999). Future studies with an aim to feed into treatments for specific suicide modes should focus on suicide thoughts, urges, plans, and/or attempts separately. Third, even though our analyses contained a well powered sample, most of the respondents self-identified themselves as females. However, the two groups of participants with and without experiences of childhood abuse did not differ regarding gender identity. Fourth, although participants who have experienced sexual and/or physical abuse may have also experienced emotional abuse and/or neglect, we did not examine this form of abuse. Future studies would benefit from an inclusion of a group of participants who have experienced emotional/psychological abuse and neglect as children. This is because emotional/psychological abuse appears to be strongly associated with suicide thoughts and attempts (Angelakis et al., 2019; Angelakis et al., 2020a, b). Fifth, in the current study we used two single items with each designed to assess experiences of childhood

sexual abuse and that of physical abuse. Sexual and physical abusive situations often occur together in ways which are complex and are also characterized by different types of, and intensities of, emotional abuse. It can be argued that using questionnaire items to try to capture these types of interactive abusive experiences in childhood are inadequate (Hovdestadt et al., 2015; Mathews et al., 2020); a position with which we agree. Hence, we would encourage all research endeavors exploring the effects of abuse in childhood to use both in-depth quantitative and qualitative methodologies in a manner designed to facilitate the convergence of findings. Last, although experiences of childhood sexual/physical abuse were reported retrospectively, evidence suggests that recall biases do not significantly weaken the associations between experiences of childhood abuse and mental health problems (Fergusson et al., 2011).

4. Conclusions

This study aimed to explore perceptions of social support as a buffer against suicide thoughts and behaviors in individuals with and without experiences of childhood sexual and/or physical abuse. Our results showed that almost 31% of a British sample self-reported experiences of sexual and/or physical abuse as a child, and that these respondents tended to report more severe symptoms of anxiety, depression, and suicide thoughts and behaviors, as well as lower perceptions of social support. Furthermore, there were stronger negative relationships between perceived social support, and suicide thoughts and behaviors in those who have experienced abuse as children. This finding suggests that social support may be significantly affected by childhood adversities. Last, our prediction that social support would act as a stronger buffer for the relationships between anxiety, depression, and suicide experiences in those having experienced childhood abuse was not supported. This finding suggests the direct and transdiagnostic protective role of perceptions of social support across participants with different life experiences which deserves further exploration.

AUTHOR DISCLOSURE

We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all of us.

We confirm that we have given due consideration to the protection of intellectual property associated with this work and that there are no impediments to publication, including the timing of publication, with respect to intellectual property. In so doing, we confirm that we have followed the regulations of our institutions concerning intellectual property.

We understand that the Corresponding Author is the sole contact for the Editorial process (including Editorial Manager and direct communications with the office). He is responsible for communicating with the other authors about progress, submissions of revisions and final approval of proofs. We confirm that we have provided a current, correct email address which is accessible by the Corresponding Author and which has been configured to accept email from (ioannis.angelakis@southwales.ac.uk).

Role of funding sources

No financial support has been received.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Conflict of interest

All authors declare no conflict of interest.

Acknowledgement

We thank Matilda Angelaki for comments that greatly improved the manuscript

References

Afifi, T., Boman, J., Fleisher, W., Sareen, J., 2009. The relationship between child abuse, parental divorce, and lifetime mental disorders and suicidality in a nationally representative adult sample. Child Abuse Negl. 33 (3), 139–147. https://doi.org/10.1016/j.chiabu.2008.12.009.

Angelakis, I., Austin, J.L., Slater, C., Roderique-Davies, G., 2018. Experiencing adverse social relationships: The construction and validation of a self-report scale that measures individuals-history of social punishment. J. Psychopathol. Behav. Assess 40, 355–365. https://doi.org/10.1007/s10578-020-01077-3.

Angelakis, I., Gooding, P., 2020a. Adverse social relationships in childhood: are there links with depression, obsessive-compulsive disorder and suicidality in Adulthood? Child Psychiatry Hum. Dev. https://doi.org/10.1007/s10578-020-01077-3.

Angelakis, I., Gooding, P., 2020b. A novel tool showing that perceptions of adverse social relationships in childhood were linked with mental health problems and suicidal experiences: validation of the English version of the History of Social Punishment (HoSP) scale. Psychiatry Res. 285, 112807 https://doi.org/10.1016/j.psychres.2020.112807.

Angelakis, I., Austin, J., Gooding, P., 2020a. Association of childhood maltreatment with suicide behaviors among young people: a systematic review and meta-analysis. JAMA Network Open 3 (8), e2012563. https://doi.org/10.1001/jamanetworkopen.2020.12563.

Angelakis, I., Austin, J., Gooding, P., 2020b. Childhood maltreatment and suicide attempts in prisoners: a systematic meta-analytic review. Psychol. Med. 50 (1), 1–10. https://doi.org/10.1017/S0033291719002848.

Angelakis, I., Gillespie, E., Panagioti, M., 2019. Childhood maltreatment and adult suicidality: a comprehensive systematic review with meta-analysis. Psychol. Med. 49 (7), 1057–1078. https://doi.org/10.1017/S0033291718003823.

Barrera, M., 1988. Models of social support and life stress: beyond the buffering hypothesis. In: Cohen, L.H. (Ed.), Life Events and Psychological Functioning. Sage, Newbury Park, CA, pp. 211–236.

Bentley, K.H., Franklin, J.C., Ribeiro, J.D., Kleiman, E.M., Fox, K.R., Nock, M.K., 2016. Anxiety and its disorders as risk factors for suicidal thoughts and behaviors: A meta-analytic review. Clin. Psychol. Rev. 43, 30–43. https://doi.org/10.1016/j.cpr.2015.11.008.

Bruwer, B., Emsley, R., Kidd, M., Lochner, C., Seedat, S., 2008. Psychometric properties of the Multidimensional Scale of Perceived Social Support in youth. Compr. Psychiatry 49 (2), 195–201. https://doi.org/10.1016/j.comppsych.2007.09.002.

Chen, L., Ngoubene-Atioky, A., Zanardelli, G., Yuanping, D., Yu, L., 2020. Childhood Abuse and Suicidal Behaviors Among Chinese Migrant Workers: the Mediating Role of Alexithymia and Social Support. Archives of Suicide Research 24 (4), 633–647. https://doi.org/10.1080/13811118.2019.1658142.

Cohen, J., Cohen, P., 1983. Applied Multiple Regression/Correlation Analysis For the Behavioural Sciences. Erlbaum, Hillsdale NJ.

Cohen, S., Wills, T.A., 1985. Stress, social support, and the buffering hypothesis. Psychol. Bull. 98 (2), 310–357. https://doi.org/10.1037/0033-2909.98.2.310.

Evans, S., Steel, A., DiLillo, D., 2013. Child maltreatment severity and adult trauma symptoms: does perceived social support play a buffering role? Child Abuse Negl. 37 (11), 934–943. https://doi.org/10.1016/j.chiabu.2013.03.005.

Gardner, M.J., Thomas, H.J., Erskine, H., DePrince, A.P., 2019. The association between five forms of child maltreatment and depressive and anxiety disorders: A systematic review and meta-analysis. Child Abuse & Neglect 96, 104082. https://doi.org/10.1016/j.chiabu.2019.104082.

Gooding, P.A., Littlewood, D., Owen, R., Johnson, J., Tarrier, N., 2019. Psychological resilience in people experiencing schizophrenia and suicidal thoughts and behaviours. Journal of Mental Health 28 (6), 597–603. https://doi.org/10.1080/09638237.2017.1294742.

Gooding, P., Sheehy, K., Tarrier, N., 2013. Perceived stops to suicidal thoughts, plans, and actions in persons experiencing psychosis. Crisis-the Journal of Crisis Intervention and Suicide Prevention 34 (4), 273–281. https://doi.org/10.1027/0227-5910/a000194.

Fergusson, D.M., Horwood, L.J., Boden, J.M., 2011. Structural equation modeling of repeated retrospective reports of childhood maltreatment. International Journal of Methods in Psychiatry Research 20, 93–104. https://doi.org/10.1002/mpr.337.

Hefner, J., Eisenberg, D., 2009. Social Support and Mental Health Among College Students. American Journal of Orthopsychiatry 79 (4), 491–499. https://doi.org/10.1037/a0016918.

Hovdestadt, W., Campeau, A., Potter, D., Tonmyr, L.A., 2015. Systematic review of childhood maltreatment assessments in population-representative surveys since 1990. PLoS One 10, e0123366. https://doi.org/10.1371/journal.pone.

Johnson, J., Gooding, P.A., Wood, A.M., Taylor, P.J., Pratt, D., Tarrier, N., 2010. Resilience to suicidal ideation in psychosis: positive self-appraisals buffer the impact of hopelessness. Behav. Res. Ther. 48 (9), 883–889.

Johnson, J., Wood, A.M., Gooding, P., Taylor, P.J., Tarrier, N., 2011. Resilience to suicidality: the buffering hypothesis. Clin. Psychol. Rev. 31 (4), 563–591. https://doi.org/10.1016/j.cpr.2010.12.007.

Kays, K., Gathercoal, K., Buhrow, W., 2012. Does survey format influence self-disclosure on sensitive question items? Comput Human Behav 28 (1), 251–256. https://doi.org/10.1016/j.chb.2011.09.007.

Linda, W., Marroquín, B., Miranda, R., 2012. Active and passive problem solving as moderators of the relation between negative life event stress and suicidal ideation among suicide attempters and non-attempters. Archives of Suicide Research 16 (3), 183–197. https://doi.org/10.1080/13811118.2012.695233.

Logan-Greene, P., Green, S., Nurius, P.S., Longhi, D., 2014. Distinct contributions of adverse childhood experiences and resilience resources: a cohort analysis of adult physical and mental health. Soc. Work Health Care 53 (8), 776–797. https://doi.org/10.1080/00981389.2014.944251.

Mann, J.J., Waternaux, C., Haas, G.L., Malone, K.M., 1999. Toward a clinical model of suicide behaviour in psychiatric patients. American Journal of Psychiatry 156, 181–189.

Mathews, B., Pacella, R., Dunne, M.P., Simunovic, M., Marston, C., 2020. Improving measurement of child abuse and neglect: a systematic review and analysis of national prevalence studies. PLoS One 15 (1), e0227884. https://doi.org/10.1371/journal.pone.0227884.

Matel-Anderson, D., Bekhet, A., Garnier-Villarreal, M., 2019. Mediating effects of positive thinking and social support on suicide resilience. West. J. Nurs. Res. 41 (1), 25–41. https://doi.org/10.1177/0193945918757988.

McLaughlin, K.A., Koenen, K.C., Hill, E.D., Petukhova, M., Sampson, N.A., Zaslavsky, A. M., Kessler, R.C., 2013. Trauma exposure and posttraumatic stress disorder in a national sample of adolescents. J. Am. Acad. Child Adolesc. Psychiatry 52 (8), 815–830. https://doi.org/10.1016/j.jaac.2013.05.011 e14.

McLaughlin, K., Green, J., Gruber, M., Sampson, N., Zaslavsky, A., Kessler, R., 2012. Childhood adversities and first onset of psychiatric disorders in a national sample of adolescents. Arch. Gen. Psychiatry 69 (11), 1151–1160. https://doi.org/10.1001/archgenpsychiatry.2011.2277.

Merrick, M.T., Ford, D.C., Ports, K.A., Guinn, A.S., 2018. Prevalence of adverse childhood experiences from the 2011-2014: behavioral risk factor surveillance system in 23 States. JAMA Pediatr 172 (11), 1038–1044. https://doi.org/10.1001/jamapediatrics.2018.2537.

Office for National Statistics, 2020. Child abuse in England and Wales. Office for National Statistics, London.

Osman, A., Bagge, C.L., Gutierrez, P.M., Konick, L.C., Kopper, B.A., Barrios, F.X., 2001. The Suicidal Behaviors Questionnaire- Revised (SBQ-R): Validation with clinical and nonclinical samples. Assessment 28, 443–454. https://doi.org/10.1016/j.jad.2015.02.002.

Owen, R., Gooding, P., Dempsey, R., Jones, S., 2015. A qualitative investigation into the relationships between social factors and suicidal thoughts and acts experienced by people with a bipolar disorder diagnosis. J. Affect. Disord. 176, 133–140. https://doi.org/10.1016/j.jad.2015.02.002.

Panagioti, M., Gooding, P., Taylor, P.J., Tarrier, N., 2014. Perceived social support buffers the impact of PTSD symptoms on suicidal behavior: implications into suicide resilience research. Compr. Psychiatry 55 (1), 104–112. https://doi.org/10.1016/j.comppsych.2013.06.004.

Prati, G., Pietrantoni, L., 2010. The relation of perceived and received social support to mental health among first responders: a meta-analytic review. J. Community Psychol. 38 (3), 403–417. https://doi.org/10.1002/jcop.20371.

Radloff, L.S., 1977. The CES-D scale: a self-report depression scale for research in the general population. Appl. Psychol. Measure 1 (3), 385–401. https://doi.org/10.1177/014662167700100306.

Runsten, S., Korkeila, K., Koskenvuo, M., Rautava, P., Vainio, O., & Korkeila, J. (2014). Can social support alleviate inflammation associated with childhood adversities? *Nordic journal of psychiatry*, 68(2), 137–144. https://doi.org/10.3109/08039488.2013.786133.

Siegmann, P., Willutzki, U., Fritsch, N., Nyhuis, P., Wolter, M., Teismann, T., 2019. Positive mental health as a moderator of the association between risk factors and suicide ideation/behavior in psychiatric inpatients. Psychiatry Res. 273, 678–684. https://doi.org/10.1016/j.psychres.2019.01.091.

Southwick, S., Sippel, L., Krystal, J., Charney, D., Mayes, L., Pietrzak, R., 2016. Why are some individuals more resilient than others: the role of social support. World Psychiatry 15 (1), 77–79. https://doi.org/10.1002/wps.20282.

Tanaka-Matsumi, J., Kameoka, V.A., 1986. Reliabilities and concurrent validities of popular self-report measures of depression, anxiety, and social desirability. J. Consult. Clin. Psychol. 54, 328.

Tham, S.G., Ibrahim, S., Hunt, I.M., Kapur, N., Gooding, P., 2020. Examining the mechanisms by which adverse life events affect having a history of self-harm, and the protective effect of social support. J. Affect. Disord. 263, 621–628. https://doi.org/10.1016/j.jad.2019.11.037.

Trauelsen, A., Bendall, S., Jansen, J., Nielsen, H., Pedersen, M., Trier, C., Haahr, U., Simonsen, E., 2016. Childhood adversities: social support, premorbid functioning and social outcome in first-episode psychosis and a matched case-control group. Australian & New Zealand Journal of Psychiatry 50 (8), 770–782. https://doi.org/10.1177/0004867415625814.

Williams, R. & Joseph, S. (1999). Conclusions: an integrative psychosocial model of PTSD. In W. Yule (Ed.) *Post-traumatic Stress disorders: Concepts and Therapy* (pp. 297–314). Chichester, England: Wiley.

Xie, P., Wu, K., Zheng, Y., Guo, Y., Yang, Y., He, J., Ding, Y., Peng, H., 2018. Prevalence of childhood trauma and correlations between childhood trauma, suicidal ideation, and social support in patients with depression, bipolar disorder, and schizophrenia in southern China. J. Affect. Disord. 228, 41–48. https://doi.org/10.1016/j.jad.2017.11.011.

Zung, W.K., 1971. A raring instrument for anxiety disorders. Psychosomatics 12, 371–379.