BSc in Psychology

Mental Health Among Parentally and Sibling Bereaved Children: The Association with Parental and Friend Support

June, 2017

Author: Nanna Margrét Kristinsdóttir

ID number: 041293 - 2259
Foreword

Submitted in partial fulfillment of the requirements of the BSc Psychology degree, Reykjavik University, this thesis is presented in the style of an article for submission to a peer-reviewed journal.
Abstract – English

Studies have suggested that parental or sibling loss in childhood can contribute to psychopathological problems and general distress, where children’s family environmental conditions after bereavement are the most effective moderators. The aims of the study were to assess the association of childhood bereavement with mental health (e.g., anxiety, depression and anger levels) after accounting for gender difference in mental health as well as mental health by different levels of social support. Furthermore, the aims were to examine if parental and/or friend support could moderate the effects of bereavement on mental health. Data in the study were obtained from the Youth in Iceland survey which was conducted by the Icelandic Centre for Social Research and Analysis (ICSRA) in February 2016. The sample included 4776 8th-10th grade elementary school students, of which 2393 were boys and 2335 were girls. The results demonstrated that girls had worse mental health than boys. In addition, parental and friend support had positive impact on participant’s mental health. Bereavement had negative impact on children’s mental health. Friend support moderated the relationship between bereavement and children’s anxiety and depression levels.

Keywords: gender, parental support, friend support, bereavement, loss, anxiety, depression, anger.

Abstract – Icelandic


Lykilorð: kyn, foreldra-vinastuðningur, vinastuðningur, ástvinamissir, missir, kvíði, þunglyndi, reiði.
Mental Health Among Parentally and Sibling Bereaved Children: The Association with Parental and Friend Support

Attachments with other beings are essential for humans to thrive. The strongest bonds in humans are formed within the innermost families, between children, their siblings and parents or caregivers. Attachments are the foundation of many emotions. Bowlby (1980) claimed that when attachments are disrupted, namely by death, it manifests in heightened emotional distress which can lead to psychopathological problems (Bowlby, 1980). It has been indicated that younger children and adolescents are more emotionally vulnerable than older individuals and may be more susceptible to negative life events, such as losing a parent or a sibling (Bowlby, 1980; Mann, Kristjansson, Sigfusdottir, & Smith, 2014).

The Effects of Losing a Parent or a Sibling

The death of a parent or a sibling is a traumatic experience and considered to be one of the most stressful life events children encounter (Luecken & Roubinov, 2012). Parental loss results in changes in caregiver’s family environment, as surviving caregivers may themselves have elevated levels of stress. Therefore, additional changes may occur in children’s daily routines (Luecken & Roubinov, 2012). Losing a parent or a sibling are similar experiences as sibling loss can as well result in changes of caregiver’s family environment as parents are grieving and may not fully be able to take care of the surviving child or children (Dickens, 2014). Consequently, bereavement has direct impact on the child or children as well as indirect impact through the surviving caregiver or parent. According to studies from the United States and Europe the numbers of sibling or parental bereavement in childhood range from 3,5% to 8% (Fauth, Thompson, & Penny, 2009; Fletcher, Mailick, Song, & Wolfe, 2013; Parsons, 2011). Thus, parental or sibling loss is the reality for too many children.
Studies have suggested that parental or sibling loss in childhood can contribute to psychopathological problems and general distress, where the child’s family environmental conditions (e.g., poor mental health of the surviving caregiver) after bereavement are the most effective moderator (Dowdney, 2000; Luecken & Roubinov, 2012; Morantz et al., 2013; Morris, Gabert-Quillen, Friebert, Carst, & Delahanty, 2016). Psychopathological problems in parental and sibling loss include increased levels of internalizing problems, such as depressive symptoms, depression, self-harming behaviors, anxiety disorders, post-traumatic stress disorder (PTSD), complicated traumatic grief and poor quality of life (Brent, Melhem, Donohoe, & Walker, 2009; Dickens, 2014; Harrison & Harrington, 2001; Koblenz, 2016; Rostila, Berg, Arat, Vinnerljung, & Hjern, 2016; Salifu Yendork & Somhlaba, 2014; Sigfusdottir & Silver, 2009; Tremblay & Israel, 1998; Tweed, Schoenbach, George, & Blazer, 1989; Zeanah et al., 2009) where girls show more internalizing problems than boys (Stikkelbroek, Bodden, Reitz, Vollebergh, & Baar, 2016). Results from other studies have additionally shown that girls generally have poorer mental health than boys (Chodavadia, Ahuja, Kinger, & Levy, 2016; Dambrun, 2007). A longitudinal study conducted nine months after a parental death and a follow-up study two years later demonstrated that bereaved youth had higher frequency of depression at both times and higher frequency of anxiety and alcohol or substance abuse than non-bereaved people at follow up (Brent et al., 2009; Gray, Weller, Fristad, & Weller, 2011). In addition, a prospective longitudinal study and a literature review have shown that externalizing problems such as less success in school and behavioral problems characterized by anger, increase as well after sibling or parental bereavement (Dowdney, 2000; Stikkelbroek et al., 2016).

The hypothalamic-pituitary-adrenal (HPA) axis activates stress responses by promoting the secretion of cortisol in the body in order to help it deal with stressors (Carlson, 2013). The HPA axis can begin to work disorderly when people are exposed to adversity in
childhood and thus, childhood bereavement may result in chronic stress. Heightened cortisol levels can increase the risk of developing physical problems in the future (Luecken & Roubinov, 2012; McCrory, De Brito, & Viding, 2010). Studies have shown that parentally bereaved young adults (mean age = 19.60 years) generally had higher cortisol levels than non-bereaved ones (Luecken & Appelhans, 2006).

**Risk and Protective Factors of Mental Health**

Children will often be deprived of substantial emotional exchange which became lost when their parent dies. It will probably become hard for the surviving parent to continue carrying out his/her part, let alone taking over the part of the late one (Tremblay & Israel, 1998). Caregivers to children that have lost a parent showed increased levels of depression, PTSD and complicated grief. In addition, as functioning of caregivers worsened did the self-esteem of bereaved children decline (Melhem, Walker, Moritz, & Brent, 2008). When comparing both parents and siblings of a deceased child, the results showed that higher frequency of maternal depression, PTSD and prolonged grief disorder, resulted in higher frequency of the same problems with the surviving sibling (Gray et al., 2011; Morris et al., 2016). This supports the argument that good family environment is crucial, especially for grieving children.

Support from friends and greater family consistency has been found to be protective factors when children experience bereavement (Luecken & Roubinov, 2012). Bereaved young adults that have lost their sibling during childhood were more likely to have worked through their grief and have lower levels of anxiety and depressive symptoms if they have had sufficient social support, for example, from a partner (Sveen, Eilegård, Steineck, & Kreicbergs, 2014). In addition, risk of developing internalizing disorders was reduced when orphaned children were placed in a foster home where family support and consistency was abundant (Salifu Yendork & Somhlaba, 2014; Zeanah et al., 2009).
Children and adults that had lost a parent perceived individual therapy and support from surviving parent as significantly helpful. However, support from friends was perceived most helpful, especially support from friends that had also lost a parent (Koblenz, 2016; Marwit & Carusa, 1998). Depressive symptoms increased with loneliness and decreased with feelings of being accepted or loved and thus, with more perceived parental support (Adam et al., 2011; Zhao et al., 2011). In addition, state anxiety decreased with improved relationship with a surviving parent (Raveis, Siegel, & Karus, 1999).

Over the years studies have examined the psychological effects of children that have lost a parent or a sibling and have generally found that bereaved children had more psychopathological problems than non-bereaved children (Koblenz, 2016; Morantz et al., 2013; Stikkelbroek et al., 2016; Worden, Davies, & McCown, 1999). However, there has been a lack of research regarding bereaved children’s mental health in Iceland as well as a lack of research examining children’s conditions and family and social support after bereavement. The aims of the study were to assess the association of childhood bereavement with mental health (e.g., anxiety, depression and anger levels) after gender differences in mental health and mental health by different levels of social support had been accounted for. Furthermore, the aims were to examine if parental and/or friend support could moderate the effects of bereavement on mental health. Five hypotheses were presented. First, girls have worse mental health than boys. Second, children with low parental or friend support have worse mental health than children with high support. Third, bereavement is an independent predictor of poor mental health when children’s gender and social support have been accounted for. Fourth, worse mental health associates with lower levels of parental support among bereaved children. Fifth, worse mental health associates with lower levels of friend support among bereaved children.
Method

Participants

Participants in the study were a sample derived from the *Youth in Iceland* survey which was conducted by the Icelandic Centre for Social Research and Analysis (ICSRA) in February 2016. The survey was submitted to every student present in 8th – 10th grade in Icelandic elementary schools, on the day the survey was conducted. Participants were volunteers and were not rewarded or paid for their participation. The total response rate at a national level was 86% (ICSRA, 2016).

An information letter about the survey was sent to all parents, where they were asked to inform if they didn’t want their child to participate. A total of 10,687 students participated in the survey (ICSRA, 2016). However, in the current study a randomized sample of the total number of respondents was used. The sample included 4776 students, of which 2393 were boys and 2335 were girls. Forty-eight students did not disclose their gender. The age of the participants ranged from 12 to 18 years, the mean age was 14.98 years with a standard deviation of 0.82 years.

Instruments and Measures

Detailed questionnaire was used in the survey. The ICSRA questionnaire was first developed by employees from the institute for Educational Research, in collaboration with the Ministry of Education. From the year 1998 they were further developed and administrated by ICSRA. The questionnaire for 8th – 10th grade in 2016 included 81 questions on 32 pages.

Data were received from seven questions from the elementary school survey in electronic form in the statistical program SPSS Statistics. This study included questions about gender, parental support, friend support and bereavement, and anxiety, depression and anger levels.
**Gender.** The question about participant’s gender had the options boy which was coded as 1 and girl which was coded as 2.

**Parental Support.** The parental support scale consisted of five questions of parental support. The key question reads as follows “How easy or difficult would it be for you to get the following features from your parents?” with the items “Caring and warmth”, “Discussions about personal matters”, “Advice on education”, “Advice for your other tasks (subjects)” and “Help on various tasks”. The response options were on a four-point scale (1 = Very hard, 2 = Rather hard, 3 = Rather easy and 4 = Very easy). The scale was recoded into one continuous variable. A factor analysis showed that all the items were associated with one factor. Cronbach’s alpha test showed that the internal consistency of the scale was good (α = 0.88).

**Friend Support.** The friend support scale consisted of five questions of friend support. The key question reads as follows “How easy or difficult would it be for you to get the following features from your friends?” with the items “Caring and warmth”, “Discussions about personal matters”, “Advice on education”, “Advice for your other tasks (subjects)” and “Help on various tasks”. The response options were on a four-point scale (1 = Very hard, 2 = Rather hard, 3 = Rather easy and 4 = Very easy). The scale was recoded into one continuous variable. A factor analysis showed that all the items were associated with one factor. Cronbach’s alpha test showed that the internal consistency of the scale was good (α = 0.88).

**Bereavement.** One item from the key question “Has any of the following happened to you?”, the item reads as follows “Your parent or a sibling died”. The response options were on a four-point scale (1 = Yes, in the last 30 days, 2 = Yes, in the last 12 months, 3 = Yes, more than 12 months ago, 4 = No). The variable was recoded, the response option “No” was recoded into 0 and the response options, “Yes, in the last 30 days”, “Yes in the last 12 months” and “Yes, more than 12 months ago” were recoded into 1.
**Anxiety Levels.** Anxiety levels consisted of three questions from the Icelandic version of the depressed affect scale of the Brief Symptom Inventory, derived from Derogatis (Derogatis, Lipman, & Covi, 1973; Sigfusdottir, Farkas, & Silver, 2004). The key question reads as follows “How frequently did you become aware of the following indispositions or discomforts during the last week?” with the items “Nervous”, “Sudden fear for no reason” and “You were tense”. The response options were on a four-point Likert scale (1 = Almost never, 2 = Rarely, 3 = Sometimes, 4 = Often). The scale was recoded into one continuous variable. A factor analysis showed that all the items were associated with one factor. Cronbach’s alpha test showed that the internal consistency of the scale was good (\(\alpha = 0.80\)).

**Depression Levels.** Depression levels consisted of eight questions from the Icelandic version of the depressed affect scale of the Brief Symptom Inventory, derived from Derogatis (Derogatis et al., 1973; Sigfusdottir et al., 2004). The key question reads as follows “How frequently did you become aware of the following indispositions or discomforts during the last week?” with the items “You were sad or had little interest in doing things”, “You felt lonely”, “You started to cry easily or wanted to cry”, “You were depressed or sad”, “You were not excited about doing anything”, “You felt slow or had little power”, “You felt that the future was hopeless” and “You thought about suicide”. The response options were on a four-point Likert scale (1 = Almost never, 2 = Rarely, 3 = Sometimes, 4 = Often). The scale was recoded into one continuous variable. A factor analysis showed that all the items were associated with one factor. Cronbach’s alpha test showed that the internal consistency of the scale was excellent (\(\alpha = 0.92\)).

**Anger Levels.** Anger levels consisted of five questions. The key question reads as follows “How frequently did you become aware of the following indispositions or discomforts during the week?” with the items “It was easy to irritate you”, “You got fits of anger that you could not control”, “You wanted to break or smash things”, “You had an
argument” and “You shouted or threw things”. The response options were on a four-point Likert scale (1 = Almost never, 2 = Rarely, 3 = Sometimes, 4 = Often). The scale was recoded into one continuous variable. A factor analysis showed that all the items were associated with one factor. Cronbach’s alpha test showed that the internal consistency of the scale was good (α = 0.83).

**Procedure**

The elementary school survey was conducted by ICSRA in February 2016. It was a population-based, cross-sectional survey. Questionnaires were sent to every school in Iceland and students asked to answer the questionnaires the same day. Detailed instructions followed for teachers on how to submit the questionnaires and the information that was supposed to be shared with students, to ask for help if something was unclear and they should do their best to answer the questions accordingly. Teachers were additionally demanded to deliver to the students that the questionnaire was anonymous so answers could not be traced to individuals. After the students had answered the questionnaire, they were asked to place it in an unmarked envelope.

**Design and Data Analysis**

In this study a multiple regression analysis was used to test the association of gender, parental support, friend support and bereavement with mental health. The independent variables were gender, parental support, friend support and whether children had lost a parent or a sibling. The dependent variables were anxiety, depression and anger levels. Descriptive statistics were used to describe the basic features of the data.

Two centered variables were created from the parental and friend support scales, the centered variables were then recoded into two interaction-variables that included parental or sibling loss, parental or sibling loss * parental support and parental or sibling loss * friend support.
Heteroscedasticity was found in both the depression and the anger models and therefore the assumption of homoscedasticity was broken. The residuals were not normally distributed in any of the models with the mean residual zero and therefore the assumption of normal distribution of the error was broken. The reason for these broken assumptions was that the dependent variables were not normally distributed. The dependent variables distribution was positively skewed as more children had low rather than high anxiety, depression and anger levels.

Results

Descriptive Statistics

A total of 4776 elementary school students participated in the study, of which 2393 (50.10%) were boys and 2335 (48.90%) girls. Forty-eight students did not disclose their gender.

The descriptive statistics for parental and friend support used as the independent variables in the study as well as the psychological variables used as the dependent variables in the study is shown in table 1.

Table 1

<table>
<thead>
<tr>
<th>Support variables</th>
<th>N</th>
<th>Range</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental support</td>
<td>4619</td>
<td>0 – 15</td>
<td>12.62</td>
<td>2.92</td>
</tr>
<tr>
<td>Friend support</td>
<td>4572</td>
<td>0 – 15</td>
<td>10.83</td>
<td>3.45</td>
</tr>
<tr>
<td>Psychological variables</td>
<td>N</td>
<td>Range</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Anxiety levels</td>
<td>4616</td>
<td>0 – 9</td>
<td>2.32</td>
<td>2.51</td>
</tr>
<tr>
<td>Depression levels</td>
<td>4586</td>
<td>0 – 24</td>
<td>5.40</td>
<td>6.10</td>
</tr>
<tr>
<td>Anger levels</td>
<td>4635</td>
<td>0 – 15</td>
<td>3.10</td>
<td>3.29</td>
</tr>
</tbody>
</table>
Every participant answered the question about whether their parent or sibling had died (4776). Those who answered yes to the question were 183 (3.80%) students and those who answered no to the question were 4593 (96.20%).

Correlation between the dependent variables anxiety, depression and anger levels and the independent variables gender, parental support, friend support and parental or sibling loss was measured. As can be seen in table 2, correlation between most of the variables was significant ($p < 0.05$). Gender had the strongest correlation with the dependent variable, anxiety. Parental support had the strongest correlation with the dependent variables, depression and anger levels.

Table 2

<table>
<thead>
<tr>
<th></th>
<th>Gender</th>
<th>Parental support</th>
<th>Friend support</th>
<th>Parental or sibling loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental support</td>
<td>0.01</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friend support</td>
<td>0.19**</td>
<td>0.37**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Parental or sibling</td>
<td>-0.02</td>
<td>-0.11**</td>
<td>-0.03*</td>
<td>1</td>
</tr>
<tr>
<td>loss</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety levels</td>
<td>0.31**</td>
<td>-0.28**</td>
<td>-0.12**</td>
<td>0.06**</td>
</tr>
<tr>
<td>Depression levels</td>
<td>0.29**</td>
<td>-0.41**</td>
<td>-0.26**</td>
<td>0.07**</td>
</tr>
<tr>
<td>Anger levels</td>
<td>0.07**</td>
<td>-0.34**</td>
<td>-0.17**</td>
<td>0.09**</td>
</tr>
</tbody>
</table>

** $p < 0.01$, * $p < 0.05$

Multiple Regression

Three models of a multiple regression analysis were conducted with the forced entry method to see if gender, parental support, friend support and bereavement predicted children’s mental health. Additionally, to test the interaction effects of parental support and bereavement and friend support and bereavement on children’s mental health. The first model included anxiety as dependent variable, the second included depression as dependent variable and the third included anger as dependent variable.
Model I: Anxiety. A multiple regression analysis was conducted on the independent variables, gender, parental support, friend support and parental or sibling loss and the dependent variable, anxiety levels. Interaction effects were tested as well to examine whether either parental or friend support moderated the relationship between parental or sibling bereavement on anxiety levels (see table 3). The results indicated that the model was significant $F(6, 4377) = 164.50, p < 0.01$. It was found that gender, parental support, friend support, parental or sibling loss and the interaction effects explained 18.40% of the variance in children’s anxiety levels ($R^2 = 18.40$, Adjusted $R^2 = 18.30$).

The results from the multiple regression which predicted children’s anxiety levels can be seen in table 3. In the model the standardized beta coefficients represent the amount of standard deviation anxiety levels will variate, per standard deviation increase in any of the predictor variables, given that the effects of the other predictor variables in the model were held constant. However, the unstandardized coefficients represent the amount anxiety levels will variate, per unit increase in any of the predictor variables, given that the effects of the other predictor variables in the model were held constant. The analysis showed that gender predicted children’s anxiety levels. Girls had 1.65 units higher anxiety levels than boys ($B = 1.65, t = 23.52, p < 0.01$). In addition, parental support predicted children’s anxiety levels. If children’s parental support increased by one standard deviation, their anxiety levels decreased by 0.24 units ($\beta = -0.24, t = -15.84, p < 0.01$). Additionally, friend support predicted children’s anxiety levels. If children’s friend support increased by one standard deviation, their anxiety levels decreased by 0.10 units ($\beta = -0.10, t = -6.67, p < 0.01$). Bereavement predicted children’s anxiety levels as well. Bereaved children’s anxiety levels were 0.51 units higher than the anxiety levels of non-bereaved children ($B = 0.51, t = 2.66, p < 0.01$). The interaction between parental or sibling loss and parental support was although not a significant predictor of anxiety levels ($\beta = -0.02, t = -0.91, p = 0.36$). However, the
interaction between parental or sibling loss and friend support was a significant predictor of anxiety levels ($\beta = 0.03$, $t = 2.07$, $p = 0.04$).

Table 3

*Standardized and unstandardized beta coefficients from a multiple regression which predicted children’s anxiety levels.*

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Unstandardized B</th>
<th>Coefficients Std. Error</th>
<th>Standardized coefficients/β</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>4.95</td>
<td>0.17</td>
<td>28.56</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1.65</td>
<td>0.07</td>
<td>0.33</td>
<td>23.52</td>
<td>0.01</td>
</tr>
<tr>
<td>Parental support</td>
<td>-0.21</td>
<td>0.01</td>
<td>-0.24</td>
<td>-15.83</td>
<td>0.01</td>
</tr>
<tr>
<td>Friend support</td>
<td>-0.08</td>
<td>0.01</td>
<td>-0.10</td>
<td>-6.67</td>
<td>0.01</td>
</tr>
<tr>
<td>Parental or sibling loss</td>
<td>0.51</td>
<td>0.19</td>
<td>0.04</td>
<td>2.66</td>
<td>0.01</td>
</tr>
<tr>
<td>Parental or sibling loss * parental support</td>
<td>-0.05</td>
<td>0.06</td>
<td>-0.02</td>
<td>-0.91</td>
<td>0.36</td>
</tr>
<tr>
<td>Parental or sibling loss * friend support</td>
<td>0.12</td>
<td>0.06</td>
<td>0.03</td>
<td>2.07</td>
<td>0.04</td>
</tr>
</tbody>
</table>

To further explore the effects of the interaction among parental or sibling loss and friend support on anxiety levels, standardized coefficients were calculated for parental or sibling loss at three various levels of friend support (at one standard deviation below the mean, at the mean and at one standard deviation above the mean). Figure 1 shows how the effect of parental or sibling loss on anxiety levels changed with various levels of friend support. The relationship between friend support and anxiety levels was present mainly when children had not lost a parent or a sibling.
**Figure 1.** The association between parental or sibling loss, friend support and anxiety levels.

**Model II: Depression.** A multiple regression analysis was conducted on the independent variables, gender, parental support, friend support and parental or sibling loss and the dependent variable, depression levels. Interaction effects were tested as well to examine whether either parental or friend support moderated the relationship between parental or sibling bereavement on depression levels (see table 4). The results indicated that the model was significant $F(6, 4366) = 303.04, p < 0.01$. It was found that the distribution of gender, parental support, friend support, parental or sibling loss and the interactions explained 29.40% of the distribution of depression levels ($R^2 = 29.40$, Adjusted $R^2 = 29.30$).

The results from the multiple regression which predicted children’s depression levels can be seen in table 4. In the model the standardized beta coefficients represent the amount of standard deviation depression levels will variate, per standard deviation increase in any of the predictor variables, given that the effects of the other predictor variables in the model were held constant. However, the unstandardized coefficients represent the amount depression levels will variate, per unit increase in any of the predictor variables, given that the effects of
the other predictor variables in the model were held constant. The analysis showed that
gender predicted children’s depression levels. Girls had 4.03 units higher depression levels
than boys (B = 4.03, t = 25.40, p < 0.01). In addition, parental support predicted children’s
depression levels. If children’s parental support increased by one standard deviation, their
depression levels decreased by 0.34 units (β = -0.34, t = -24.19, p < 0.01). Additionally,
friend support predicted children’s depression levels. If children’s friend support increased by
one standard deviation, their depression levels decreased by 0.21 units (β = -0.21, t = -14.39,
p < 0.01). Bereavement predicted children’s depression levels as well. Bereaved children’s
depression levels were 1.39 units higher than the depression levels of non-bereaved children
(B = 1.39, t = 3.15, p < 0.01). The interaction between parental or sibling loss and parental
support was although not a significant predictor of depression levels (β = -0.01, t = -0.80, p =
0.42). However, the interaction between parental or sibling loss and friend support was a
significant predictor of depression levels (β = 0.07, t = 4.44, p < 0.01).

Table 4

Standardized and unstandardized beta coefficients from a multiple regression which
predicted children’s depression levels.

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Unstandardized B</th>
<th>Coefficients Std. Error</th>
<th>Standardized coefficients/β</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>16.50</td>
<td>0.39</td>
<td></td>
<td>42.10</td>
<td>0.01</td>
</tr>
<tr>
<td>Gender</td>
<td>4.03</td>
<td>0.16</td>
<td>0.33</td>
<td>25.40</td>
<td>0.01</td>
</tr>
<tr>
<td>Parental support</td>
<td>-0.73</td>
<td>0.03</td>
<td>-0.34</td>
<td>-24.19</td>
<td>0.01</td>
</tr>
<tr>
<td>Friend support</td>
<td>-0.37</td>
<td>0.03</td>
<td>-0.21</td>
<td>-14.39</td>
<td>0.01</td>
</tr>
<tr>
<td>Parental or sibling loss</td>
<td>1.39</td>
<td>0.44</td>
<td>0.04</td>
<td>3.15</td>
<td>0.01</td>
</tr>
<tr>
<td>Parental or sibling loss * parental support</td>
<td>-0.10</td>
<td>0.13</td>
<td>-0.01</td>
<td>-0.80</td>
<td>0.42</td>
</tr>
<tr>
<td>Parental or sibling loss * friend support</td>
<td>0.58</td>
<td>0.13</td>
<td>0.07</td>
<td>4.44</td>
<td>0.01</td>
</tr>
</tbody>
</table>
To further explore the effects of the interaction among parental or sibling loss and friend support on depression levels, standardized coefficients were calculated for parental or sibling loss at three various levels of friend support (at one standard deviation below the mean, at the mean and at one standard deviation above the mean). Figure 2 shows how the effect of parental or sibling loss on depression levels changes with various levels of friend support. The relationship between friend support and depression levels was present mainly when children had not lost a parent or a sibling.

![Graph showing depression levels vs friend support](image)

**Figure 2.** The association between parental or sibling loss, friend support and depression levels.

**Model III: Anger.** Multiple regression was conducted on the independent variables, gender, parental support, friend support and parental or sibling loss and the dependent variable, anger levels. Interaction effects were tested as well to examine whether either parental or friend support moderated the relationship between parental or sibling bereavement on anger levels (see table 5). The results indicated that the model was significant $F(6, 4399) = 110.49, p < 0.01$. It was found that the distribution of gender, parental support, friend support,
MENTAL HEALTH AMONG PARENTALLY & SIBLING BEREAVED CHILDREN

parental or sibling loss and the interactions explained 13.10% of the distribution of anger levels \( (R^2 = 13.10, \text{Adjusted } R^2 = 13.00) \).

The results from the multiple regression which predicted children’s anger levels can be seen in table 5. In the model the standardized beta coefficients represent the amount of standard deviation anger levels will variate, per standard deviation increase in any of the predictor variables, given that the effects of the other predictor variables in the model were held constant. However, the unstandardized coefficients represent the amount anger levels will variate, per unit increase in any of the predictor variables, given that the effects of the other predictor variables in the model were held constant. The analysis showed that gender predicted children’s anger levels. Girls had 0.54 units higher anger levels than boys \( (B = 0.54, t = 5.72, p < 0.01) \). In addition, parental support predicted children’s anger levels. If children’s parental support increased by one standard deviation, their anger levels decreased by 0.32 units \( (\beta = -0.32, t = -20.07, p < 0.01) \). Additionally, friend support predicted children’s anger levels. If children’s friend support increased by one standard deviation, their anger levels decreased by 0.07 units \( (\beta = -0.07, t = -4.32, p < 0.01) \). Bereavement predicted children’s anger levels as well. Bereaved children’s anger levels were 0.79 units higher than the anger levels of non-bereaved children \( (B = 0.79, t = 3.02, p < 0.01) \). Neither, the interaction between parental or sibling loss and parental support \( (\beta = -0.02, t = -1.07, p = 0.29) \) nor the interaction between parental or sibling loss and friend support \( (\beta = 0.03, t = 1.74, p = 0.08) \) were significant predictors of anger levels.
Table 5

*Standardized and unstandardized beta coefficients from a multiple regression which predicted children’s anger levels.*

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Unstandardized B</th>
<th>Coefficients Std. Error</th>
<th>Standardized coefficients/β</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>8.01</td>
<td>0.23</td>
<td>34.51</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>0.54</td>
<td>0.09</td>
<td>0.08</td>
<td>5.72</td>
<td>0.01</td>
</tr>
<tr>
<td>Parental support</td>
<td>-0.36</td>
<td>0.02</td>
<td>-0.32</td>
<td>-20.07</td>
<td>0.01</td>
</tr>
<tr>
<td>Friend support</td>
<td>-0.07</td>
<td>0.02</td>
<td>-0.07</td>
<td>-4.32</td>
<td>0.01</td>
</tr>
<tr>
<td>Parental or sibling loss</td>
<td>0.79</td>
<td>0.26</td>
<td>0.05</td>
<td>3.02</td>
<td>0.01</td>
</tr>
<tr>
<td>Parental or sibling loss * parental support</td>
<td>-0.08</td>
<td>0.08</td>
<td>-0.02</td>
<td>-1.07</td>
<td>0.29</td>
</tr>
<tr>
<td>Parental or sibling loss * friend support</td>
<td>0.13</td>
<td>0.08</td>
<td>0.03</td>
<td>1.74</td>
<td>0.08</td>
</tr>
</tbody>
</table>

A three-way interaction between parental or sibling loss and parental support and friend support was observed and found not to be a significant predictor of anxiety, depression or anger levels. The three-way interaction was thus, not included in the multiple regression analysis.

**Discussion**

The purpose of the current study was to assess the association of childhood bereavement with mental health (e.g., children’s anxiety, depression and anger levels) after gender difference in children’s mental health and children’s mental health by different levels of social support had been accounted for. In addition, to examine if parental and/or friend support could moderate the effects of bereavement on mental health.

The first hypothesis on gender difference in children’s mental health was supported, girls had worse mental health (higher anxiety, depression and anger levels), which has also been found in previous studies (Chodavadia et al., 2016; Dambrun, 2007; Stikkelbroek et al., 2016). The second hypothesis on mental health with various social support was supported as
Mental health among parentally & sibling bereaved children

well, children with low parental or friend support had worse mental health than children with high support, similar results have been reported in various studies (Adam et al., 2011; Koblenz, 2016; Luecken & Roubinov, 2012; Marwit & Carusa, 1998; Raveis et al., 1999; Salifu Yendork & Somhlaba, 2014; Sveen et al., 2014; Zeanah et al., 2009; Zhao et al., 2011). In addition, the third hypothesis was also supported, bereavement was an independent predictor of poor mental health when children’s gender and social support had been accounted for. Bereaved children had worse mental health than non-bereaved ones (higher anxiety, anger and depression levels), which was consistent with the results of previous studies (Dowdney, 2000; Harrison & Harrington, 2001; Koblenz, 2016; Melhem et al., 2008; Salifu Yendork & Somhlaba, 2014; Stikkelbroek et al., 2016; Tremblay & Israel, 1998; Tweed et al., 1989; Zeanah et al., 2009).

However, the fourth hypothesis was not supported, worse mental health was not associated with lower levels of parental support among bereaved children. This was inconsistent with previous studies which have shown that parental support is a protective factor against poor mental health among bereaved children (Adam et al., 2011; Luecken & Roubinov, 2012; Marwit & Carusa, 1998; Salifu Yendork & Somhlaba, 2014). On the other hand, the fifth hypothesis was supported in the models that included anxiety and depression levels as higher anxiety and depression levels were associated with lower levels of friend support among bereaved children. However, the relationship was present mainly when children had not lost a parent or a sibling. This was in accordance with the studies of Koblenz (2016) which demonstrated that friend support was perceived the most helpful among bereaved children. Interestingly, the hypothesis was not supported in the anger model, higher anger levels were not associated with lower levels of friend support among bereaved children.
The results illustrate the association of the predictor variables, gender, parental support, friend support and bereavement with children’s mental health. The predictor variables distribution explained the highest portion of the variation in children’s depression levels compared to the other two models. Previous studies (Brent et al., 2009; Gray et al., 2011; Harrison & Harrington, 2001; Rostila et al., 2016) have shown that bereavement is most often associated with depression.

The strengths of the current study were that it is among the first studies in Iceland that assesses the association of bereavement and social support with children’s mental health. The study included a big sample size and it was population based as almost every child in 8th, 9th and 10th grade in Iceland (86%) participated in the study. The data in the study were nationwide, nationwide studies may be able to increase the generalizability of their results.

The first limitation of the study was that in cross-sectional studies, cause and effect cannot be implied. Second, although the sample size was big, the study assessed only a narrow age range (only 8th-10th graders) as well as only children that attended school on the date of the survey. Thus, the fact cannot be denied that children who live in the worst conditions may regularly be absent from school and therefore not present on the date of the survey. Third, bereaved children are in minority, children with low friend and parental support are also in minority, which means that those groups in the study were small and therefore may be more difficult to find any significant statistical difference between groups, as may be the case why no interaction effect was detected in some of the models. Fourth, the study was based on self-reporting from children, bias in their responses is possible and there is a potential that children may respond in a socially approved way. Fifth, this study did not assess the effects of polyvictimization, and therefore serious overestimation of the impact of bereavement on children’s mental health could be made when the impact may be a result of a different trauma (Finkelhor, Ormrod, & Turner, 2007). Finally, assumptions of
homoscedasticity and normal distribution of residuals were both violated. The reason for these broken assumptions was that the dependent variables were not normally distributed. The distribution of the psychological variables used as dependent variables was positively skewed as more children had low rather than high anxiety, depression and anger levels. Therefore, the results should be interpreted with caution.

The study is one of few that assesses the association of losing a parent or a sibling with bereaved children’s social support on mental health. Furthermore, the study is among the first studies to assess the mental health of bereaved children in Iceland. The results showed that bereavement had various negative impacts on mental health. In addition, parental and friend support had various impacts on mental health. Girls have worse mental health than boys, which indicates the importance to assess the reasons for those gender differences. The impact of friend support on anxiety and depression levels of bereaved children was also present although the impact was small, which provides the foundation that sufficient friend support for bereaved children is crucial, in order to possibly reduce the negative impacts of bereavement on mental health.

For future research, a longitudinal research design is suggested as well as a wider age range in order to assess the effects of bereavement at different ages. Assessing people with various parental and friend support that have lost a parent or a sibling in comparison to people that have not lost a parent or a sibling could be more beneficial. It might be useful to include participants with clinical conditions to compare to healthy participants, as well as to control for polyvictimization.
References


