Associations between adult attachment style and mental health care utilization: Findings from a large-scale national survey

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ABSTRACT

This study investigated association between attachment style and the use of a range of mental health services controlling socio-demographic, physical and psychological risk factors, using a large nationally representative sample from the US National Comorbidity Survey Replication (NCS-R). A total of 5,645 participants (18+) were included. The majority of participants reported their attachment as secure (63.5%), followed by avoidant (22.2%), unclassified (8.8%), and anxious (5.5%). The percentages using different health services studied varied widely (1.1% to 31.1%). People with *insecure* (anxious and avoidant) attachment were more likely to report accessing a hotline, have a session of psychological counselling or therapy, get a prescription or medicine for mental and behavioural problems. Individuals with anxious attachment only were also more likely to report the use of internet support groups or chat rooms. This is a first analysis to explore relationships between self-reported adult attachment style and a wide range of health care services. *Insecurely* attached individuals were more likely to use a wide range of health care services even after controlling for socio-demographic factors, psychiatric disorders and chronic health conditions. These findings suggest that adult attachment plays an important role in mental health care services.

Keywords: attachment, mental disorders, mental health, health services

1. Introduction

Psychiatric disorders are a significant public health problem. The Global Burden of Disease Study 2010 reported that: 1) in 2010 mental disorders accounted for 183.9 million disability-adjusted life years (DALYs), or 7.4% of all DALYs worldwide; 2) the burden caused by mental disorders significantly increased between 1990 and 2010; and 3) psychiatric disorders had been continuingly adding pressure to health care systems both in developed and developing countries (Whiteford et al., 2013). A recent systematic review on 291 diseases and injuries in 21 regions of the world from 1990 to 2010 concluded that global disease burden had shifted from communicable to non-communicable diseases, and the increasing burden of mental and behavioural disorders, musculoskeletal disorders, and diabetes tax health care systems as they strive to meet the rising needs (Murray et al., 2012). Understanding developmental predictors which heighten the risk of mental illness is therefore of paramount importance. Childhood adversity, particularly psychological trauma impacting early attachment relationships has shown to represent such a risk factor for future physical and psychological conditions (Felitti et al, 1998, McWilliams et al, 2010, Bifulco et al., 2002a, Green et al., 2010, Widom et al., 2007). Attachment theory posits that individuals develop ways of relating in relationships, based on the interactions they have in the early life with their caregivers (Bowlby, 1988). The attachment system is reflected in thoughts and behaviours related to searching for proximity to attachment figures when the needs for comfort and safety become activated. These relatively stable patterns of relating have been broadly defined as *secure* and *insecure* attachment styles, and the latter was also categorized as *insecure-anxious* and *insecure-avoidant*, according to the type of coping used when an individual perceives an attachment threat. Insecure attachment is seen as a risk factor predisposing individuals to relational stress, negative affectivity, prolonged distress, and psychopathology and, as a result, to mental and behavioural problems in general (Garcia-Ruiz et al., 2013; Ponizovsky and Drannikov, 2013; Pritchett et al., 2013). Insecure attachment styles have been shown repeatedly to be closely associated with a variety of mental health problems (Mikulincer and Shaver, 2010).

Moreover, the presence of insecure attachment itself, has been identified as a determinant of health, likely to impact attitudes toward health, color the symptom expression and health care utilization of individuals suffering from various medical conditions (Ahrens 2012, Ciechanowski et al, 2002, Maunder and Hunter, 2008, ,McWilliams et al, 2010). Similarly, mental disorders are tightly linked to the use of health services, daily functioning, and quality of life (Crystal et al., 2003). While the influence of mental illness itself on the use of mental health services is being recognized the role of adult attachment in mental health care utilization, has been minimally explored (Maunder and Hunter, 2008; Prins et al., 2008).

Although a growing body of research has investigated the association between attachment styles and mental disorders, as well as the relationship between mental disorders and the use of mental health services (Prins et al., 2008), little is known about the unique contribution of attachment insecurity to the use of a wide range of health care services. This comes as a surprise given the extensive research showing the impact of attachment style on health care utilization and health care costs in medical patients (Ciechanowski et al, 2002). A better understanding of psychosocial factors associated with health care utilization in patients with psychiatric needs is of increasing concern. Here, we investigate associations between adult attachment and mental health care utilizations, assess the strengths of those relationships after controlling socio-demographic, physical, and psychological risk factors, and explore roles of physical and psychiatric diseases in influencing of those associations.

To the best of our knowledge, this is the first study that provides a perspective on the relationship between self-reported attachment style and the use of a wide range of mental health services. We aim to examine whether adult attachment styles are associated with mental health care services.

2. Methods

2.1. Data source

Data analyzed was from the National Comorbidity Survey Replication (NCS-R). The NCS-R was a large survey of the prevalence and correlates of psychiatric disorders in the general U.S. population (Kessler and Merikangas, 2004). The survey population of the NCS-R covered all U.S. adults aged 18 and older residing in household located in the coterminous 48 mainland states. Individuals who were in institutions, including prisons, jails, nursing homes, and long-term medical or dependent care facilities, were excluded. Adults who were not able to conduct the NCS-R interview in English were also excluded.

The NCS-R data had two components (Part 1 & Part 2). Part 1 consisted the full sample of participants (N=9,282) and primarily dealt with assessments of psychiatric disorders, whereas Part 2 also provided additional information of potential risk factors, but only covered a subsample of cases (N=5,692). Part 2 included all of the Part 1 respondents with a lifetime psychiatric disorder and a probability subsample of the others (Kessler et al., 2004b). Ethics approval of the primary data collection of the NCS was provided by the University of Michigan. In the present study, we used the Part 2 of the NCS-R public use dataset.

2.2. Measures

Attachment style. Attachment style was measured by the Hazan and Shaver's self-report attachment style measure (Hazan and Shaver, 1987). It included three brief statements describing attachment styles (secure, avoidant, and anxious). Respondents provided a self-rating to each of the three statements using a 4-point scale ranging from 1 (A lot like me) to 4 (Not at all like me). This measure is widely used due to its ease of administration and reliability and validity (Ravitz et al., 2010). The statement - "I find it relatively easy to get close to other people. I am comfortable depending on others and having them depend on me. I don't worry about being abandoned or about someone getting too close to me" was used to represent *secure* attachment. *Avoidant* attachment was assessed with the statement "I am somewhat uncomfortable being close to others; I find it difficult to trust them completely and difficult to depend on them. I am nervous when anyone get too close to me." *Anxious* attachment was assessed by the statement " I

find that others are reluctant to get as close as I would like. I often worry that people who I care about do not love me or won't want to stay with me. I want to merge completely with another person, and this desire sometimes scares people away." If one rating was higher or closer to "a lot like me," he or she was assigned to the corresponding category. If the secure and an insecure rating were tied, the respondent was assigned to the insecure rating. If both insecure ratings were tied, the respondent was assigned to the anxious category. If the rating was the same for all three, the respondent was unclassified. Based on three statements, attachment styles were classified into *secure, avoidant, anxious*, and *unclassified* (Mickelson et al., 1997).

Health care services. Health care services were measured by the following questions: 1) ever having an overnight stay in a hospital or other facility to receive help for problems with emotions, mental health, or use of drug or alcohol; 2) ever use an internet support group or chat room to get help for problems with emotions or nerves; 3) ever go to a self-help group for help with emotions or nerves; 4) ever use a hotline for problems with emotions or nerves; 5) ever have a session of psychological counselling or therapy that lasted 30 minutes or longer with any type of professional; and 6) ever get a prescription or medicine for emotions, nerves or mental health, or substance use from any type of professional.

Socio-demographic factors. Variables including age, sex, marital status, education, race, household income, country of birth, and race were considered in our analyses.

Psychiatric disorders. The World Health Organization Composite International Diagnostic Interview (CIDI) was used to diagnosis psychiatric disorders based on Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV). The CIDI is believed to have a good validity for diagnosing diseases (Kessler et al., 2004a). In this study, we used lifetime diagnoses of three large diagnostic groups: *depression* (major depressive disorder and dysthymia); *anxiety* (generalized anxiety disorder, panic disorder, agoraphobia, social phobia, specific phobia, posttraumatic stress disorder); and *substance abuse* (alcohol abuse, alcohol dependence, drug abuse and drug dependence).

Chronic health conditions. Lifetime history of chronic health conditions was measured by the presence of the following diseases, arthritis, chronic back or neck problems,

frequent or severe headaches, chronic pain, seasonal allergies, stroke, heart attack, heart disease, high blood pressure, asthma, chronic lung disease, diabetes or high blood sugar, ulcers, epilepsy or seizures, and cancer.

2.3. Statistical analyses

The NCS-R used a stratified, multistage area probability sampling frame. All analyses were weighted to adjust for variation in probabilities of selection using STATA (StataCorp, College Station, TX). Descriptive analyses were used to estimate the prevalence of attachment styles, health care services, and socio-demographic distributions of the study sample. We used logistic regression to evaluate the effect of attachment styles in different health care service indicators with the adjustment of other factors.

3. Results

3.1. Characteristics of the study sample

There were 5,645 participants (18+) who had completed each attachment rating and were therefore included for further analyses. They were generally middle aged, female, married (common-law), with 12-year of education, non-Latino White, employed, and with a household income categorized as “middle” or “highest”. The majority of participants perceived their attachment as *secure* (63.5%), followed by *avoidant* (22.2%), *unclassified* (8.8%), and *anxious* (5.5%).

3.2. The use of health care services

Thirty-one percent (31.1%) of study subjects reported at least one use of a session of psychological counselling or therapy that lasted 30 minutes or longer with any type of professional. Almost a quarter (23.6%) of them received a prescription or medicine for emotions, nerves or mental health, or substance use from any type of professional. Some of 208 (3.7%) participants had at least one overnight stay in hospital or other facility to

receive care for mental health or drug/alcohol use. Just over 1% (1.1%) ever used an Internet support group or chat room to get help for problems with emotions or nerves. Slightly more, 2.6%, used hotlines for emotional problems, and 7.5% went to a self-help group for help for having problems with emotions or nerves.

3.3. Multivariate analyses of health care services

To explore factors associated with the use of individual health care services, univariate and multivariate logistic regression analyses were conducted. All variables with *P* values of less than 0.20 in the initial univariate analyses were forwarded to the subsequent multivariate logistic regression modeling. A p value < 0.20 was chosen to maximize factors that may be associated with the use of health care service in multivariate analyses. Table 1 shows a summary of multivariate analyses for a wide range of health care services studied. Those who were aged 25 and more, having a household income over than $ 30,001 per year, being a current smoker, and having a problem with substance use were associated with increased use of overnight stay. Respondents with depression or anxiety, and *anxious* attachment were more likely to use an internet support group or chat room for emotion problems. Those who were between 25 to 64 years old, female, a non-Latino White, and with depression, anxiety or substance use disorders were more likely to attend a self-help group. An increased use of hotlines for emotional problems was found in those with avoidant and/ or anxious attachment style, individuals aged 25 to 64 years old, female, married, and having depression, anxiety, substance use or chronic diseases. Those aged between 18 to 24 years old, with *avoidant* and/ or *anxious* attachment style, and who were female, with more than 13 years education, never married, a non-Latino White, currently a smoker, and having depression, anxiety, substance use disorders, or chronic diseases, were more likely to have had at least 30 minutes of psychological counselling or therapy. Those with *avoidant* and/ or *anxious* attachment who were aged 25 and more, female, a non-Latino White, with a household income less than $ 15,000, a smoker, with depression, anxiety, substance use disorders, or chronic diseases, were more likely to have had a prescription or medicine for

emotions, nerves or mental health, or substance use problem (Appendix 1 provides all the detailed results of the complex multivariate analyses).

3.4. Associations between self-report attachment styles and health care services

Attachment styles were individually associated with six measurements of health care services in univariate analyses ($p<0.001$). We used multivariate logistic regression to test associations between attachment styles and health care services after adjusting other covariates. Multivariate logistic regression analyses adjusted for socio-demographic factors (age, sex, education, marital status, household income), and physical and mental health conditions (depression, anxiety, substance use, and chronic diseases). Table 2 shows both univariate and multivariate logistic regression results. *Insecurel*y attached individuals were more likely to use a wide range of health care services even after controlling for other factors. Individuals with either *anxious* or *avoidant* attachment were more likely to use a hotline, have had a session of psychological counselling or therapy that lasted 30 minutes or longer, and get a prescription or medicine for emotions, nerves or mental health, or substance use from any type of professional. Those with *anxious* attachment only were also more likely to use an internet support group or chat room.

4. Discussions

The primary goal of this analysis was to investigate the relationship between self-reported attachment and mental health care utilizations. We found that: 1) some of 27.7% participants perceived their attachment as *insecure*, composed of 22.2% of avoidant and 5.5% anxious attachment; 2) up to one third of population (from 1.1% to 31.1%) had ever had one of the six kinds of mental health care services, with the highest use rate (31.1%) being ‘a session of psychological counselling or therapy for mental or behavioural problems’; 3) *insecurely* attached people were more likely to use a wide range of health care services even after controlling for socio-demographic factors, psychiatric disorders and chronic health conditions. Individuals with either *anxious* or *avoidant* attachment

were more likely to use a hotline, have a session of psychological counselling or therapy that lasted 30 minutes or longer, and get a medication for emotions, nerves or mental health, or substance use from any type of professional. Those with *anxious* attachment only were also more likely to use an internet support group or chat room. This suggest a possible difference in treatment preference, according to the subtype of attachment insecurity, at least for some forms of treatment. Future studies exploring this aspect can be very informative in understanding treatment compliance and success.

The prevalence of various attachment styles found in this study are in line with findings (25% avoidant and 11% anxious attachment) reported in a previous study of individual attachment styles in a large nationally representative sample of American adults (data from the National Comorbidity Survey –NCS) (Mickelson et al., 1997).

Several of our results for predisposing characteristics associated with mental health services studied are consistent with previous findings. Those who are older, female, highly educated, having clinical need, lacking resources (employment, social support, and housing), and with easy access to treatment were more likely to receive mental health services (Diaz-Granados et al., 2010; Fasoli et al., 2010; Richardson et al., 2013).

Many studies have been conducted to explore how early attachment influences on adult well-being and function (Bowlby, 1977; George and West, 1999). Goodwin summarized that the features of individual attachment developed in childhood, extended through adulthood, and played important roles in interpersonal functioning and many common mental health problems, e.g. depression, etc (Goodwin, 2003). Insecure attachment is often associated with negative interpersonal events, and both of them are associated with an increased possibility of mental health problems (Berry et al., 2007). There is a substantial body of research that supports the relationship between *insecure* attachment and mental health problems, and insecure attachment has been considered as a vulnerable factor for many mental illnesses, particularly depression and anxiety (Berry et al., 2007; Bifulco et al., 2002a; Bifulco et al., 2002b). Moreover, an intergenerational transmission of vulnerability, in which attachment may play an important role, has been proposed. Bogels and Brechman-Toussaint's review synthesized roles of family factors in the intergenerational transmission of anxiety in addition to genetic predisposition, and

concluded that *insecure* attachment in parents and in children was associated with child anxiety (Bogels and Brechman-Toussaint, 2006).

There has been rising interest in possible links between attachment and mental health care utilization. Daniel in his review summarized that there were a growing numbers of studies supporting the relationship between adult attachment and psychotherapy process (Daniel, 2006). Patients with *insecure* attachment (including both avoidant and anxious attachment) demonstrated difficulties with therapeutic relationships (Berry et al., 2008). Patients with insecure attachment were less likely to report having been hospitalized for psychiatric problems (Blackburn et al., 2010). Patients with *anxious* attachment were more likely to feel rejected from health services staff when their needs not met immediately, whereas patients with *avoidant* attachment tend to dismiss the importance of close relationships and deny feelings of not engaging in helpful relationships with health services staff (Blackburn et al., 2010).

Our study results show that insecure attachment is linked to the utilization of mental health services. In particular, the most used mental health care services were counselling and taking a prescription or medicine. We found that: 1) *insecurely* attached individuals were more likely to use a wide range of health care services compared to those with secure attachment, even after controlling socio-demographic factors, psychiatric disorders and chronic health conditions; and 2) individuals with *anxious* and *avoidant* attachments generally had similar preferences for some health care services, such as using a hotline, having a session of psychological counselling or therapy, or taking medications. Hotlines could provide an immediate intervention that can easily be accessed by individuals with insecure attachment in times of need. This may be explained by the availability and accessibility of these services.

The strengths of this study include a wide range of health service use assessed (overnight stay at hospital or other facility, hotline, internet group, counselling, prescription, etc), a full list of available variables (socio-demographic factors, psychiatric disorders, and chronic health condition), and a large-population based sample. Limitations of this study must be acknowledged. First, although the NCS-R is a large national survey, it is a cross-sectional study which limits the inferences that can be

drawn. Second, because this is a secondary data analysis of the existing dataset (NCS-R), data on frequency of use of these health care services and severity of health problems were not available, therefore, analyses of relationship between attachment style and its influence on the frequency of use of mental health services, or the relationship between attachment and the severity of mental illness cannot be assessed. However, this analysis did adjust for the presence of socio-demographic factors, psychiatric disorders, and chronic health condition in the multivariate models. Third, attachment styles were self-report measures. Fourth, the database does not specify the voluntary or involuntary nature of the health care use. Given the type of questions used in the survey, we suspect that the majority of them are targeting voluntary use of health services (e.g. questions regarding use of internet or self-help group support, counselling or hotline use). However, questions regarding admission to hospital and/or prescribed medication, indeed can hinder mixed results can be either voluntary or involuntary in nature.

5. Conclusions

This article describes the first analysis of the relationship between adult attachment style and a wide range of mental health care services, showing that adult attachment style plays an important role in the type of mental health care services used. *Insecurely* attached individuals were more likely to use a wide range of mental health care services even after controlling for other relevant factors. Given the potential importance of attachment style in health services, a better understanding of needs of individuals with insecure attachment as well as successful approaches is likely to improve the use of mental health care services for a large segment of the clinical population. In addition, our findings can have potential implications for the utilizations of various health services in general, being relevant to both mental health professionals as well as health care providers in general.

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Table 1.
A summary of multivariate analyses for a wide range of mental health care services studied

Characteristics	Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 5	Outcome 6
Attachment						
Secure	1	1	1	1	1	1
Avoidant	N.S.	N.S.	N.S.	1.52*	1.49*	1.77*
Anxious	N.S.	2.70*	N.S.	2.02*	1.49*	1.60*
Unclassified	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
Age						
18-24	1	-[a]	1	1	1	1
25-44	1.77*	-[a]	1.85*	2.22*	N.S.	1.70*
45-64	2.24*	-[a]	2.47*	2.05*	N.S.	2.46*
65+	1.95*	-[a]	N.S.	N.S.	0.29*	2.01*
Sex						
Males	-[a]	-[a]	1	1	1	1
Females	-[a]	-[a]	1.43*	2.08*	1.39*	2.01*
Education						
0-11,yr	-[a]	-[a]	-[a]	-[a]	1	-[a]
12, yr	-[a]	-[a]	-[a]	-[a]	N.S.	-[a]
13-15, yr	-[a]	-[a]	-[a]	-[a]	1.54*	-[a]
>=16,yr	-[a]	-[a]	-[a]	-[a]	2.27*	-[a]
Marital status						
Married/Common-law	-[a]	-[a]	1	1	1	1
Divorced/Separated/Widowed	-[a]	-[a]	N.S.	0.56*	N.S.	N.S.
Never married	-[a]	-[a]	N.S.	N.S.	1.74*	N.S.
Race						
Non-Latino White	-[a]	-[a]	1	-[a]	1	1
Others	-[a]	-[a]	0.69*	-[a]	0.55*	0.55*
Household income						
<15,000	1	-[a]	-[a]	-[a]	-[a]	1
15,001-30,000	N.S.	-[a]	-[a]	-[a]	-[a]	N.S.
30,001-50,000	0.56*	-[a]	-[a]	-[a]	-[a]	0.78*
50,001-70,000	0.48*	-[a]	-[a]	-[a]	-[a]	0.71*
70,001-90,000	0.44*	-[a]	-[a]	-[a]	-[a]	N.S.
>90,001	0.41*	-[a]	-[a]	-[a]	-[a]	N.S.
Types of smokers						
Current	1	-[a]	-[a]	-[a]	1	1
Ex-smoker	0.60*	-[a]	-[a]	-[a]	N.S.	N.S.
Never smoked	0.29*	-[a]	-[a]	-[a]	0.72*	0.58*
Only smoked a few times	N.S.	-[a]	-[a]	-[a]	0.75*	0.42*
Substance use						
No	1	-[a]	1	1	1	1
Yes	6.52*	-[a]	3.07*	2.47*	2.27*	1.46*

Depression						
No	-[a]	1	1	1	1	1
Yes	-[a]	1.78*	2.27*	2.68*	2.94*	2.90*
Anxiety						
No	-[a]	1	1	1	1	1
Yes	-[a]	4.23*	2.12*	3.26*	2.11*	2.49*
Chronic conditions						
No	-[a]	-[a]	-[a]	1	1	1
Yes	-[a]	-[a]	-[a]	2.14*	1.46*	1.57*

Note: -[a] not included in the analysis

* $P<0.05$

Outcomes 1 to 6: ever having an overnight stay in a hospital or other facility to receive help, use an internet support group or chat room, go to a self-help group, use a hotline, have a session of psychological counseling or therapy, and have a prescription or medicine for problems with emotions, mental health, or use of drug or alcohol.

Table 2. Associations between attachment styles and mental health care services

Groups	OR	95% CI	OR^{Adjusted}	95% CI
Ever having an overnight stay in a hospital or other facility to receive help for problems with emotions, mental health, or use of drug or alcohol				
Attachment				
Secure	1		1	
Avoidant	1.98	1.45-2.70*	1.35	0.97-1.88
Anxious	1.69	0.96-2.98	1.11	0.61-2.02
Unclassified	1.28	0.77-2.12	0.94	0.55-1.58
Ever use an internet support group or chat room to get help for problems with emotions or nerves				
Attachment				
Secure	1		1	
Avoidant	2.45	1.36-4.43*	1.70	0.93-3.11
Anxious	4.33	1.98-9.47*	2.70	1.21-6.00*
Unclassified	2.09	0.90-4.87	2.06	0.88-4.83
Ever go to a self-help group for help with emotions or nerves				
Attachment				
Secure	1		1	
Avoidant	1.70	1.35-2.13*	1.16	0.90-1.48
Anxious	2.11	1.46-3.04*	1.36	0.91-2.02
Unclassified	1.20	0.83-1.72	1.15	0.78-1.69
Ever use a hotline for problems with emotions or nerves				
Attachment				
Secure	1		1	
Avoidant	2.57	1.78-3.73*	1.52	1.03-2.25*
Anxious	4.03	2.41-6.72*	2.02	1.16-3.50*
Unclassified	1.11	0.56-2.21	0.94	0.46-1.92
Ever have a session of psychological counseling or therapy that lasted 30 minutes or longer with any type of professional				
Attachment				
Secure	1		1	
Avoidant	1.85	1.62-2.12*	1.49	1.27-1.73*
Anxious	1.95	1.54-2.46*	1.49	1.13-1.96*
Unclassified	0.87	0.70-1.08	1.00	0.78-1.28
Ever get a prescription or medicine for emotions, nerves or mental health, or substance use from any type of professional				
Attachment				
Secure	1		1	
Avoidant	2.21	1.92-2.55*	1.77	1.51-2.09*
Anxious	2.11	1.65-2.71*	1.60	1.19-2.14*
Unclassified	0.93	0.73-1.18	0.90	0.69-1.18

Note: OR= odds ratio; 95%CI=95% confidence interval
Adjusted for age, sex, education, marital status, household income, depression, anxiety, substance use, and chronic diseases.

* $P<0.05$.

Table A1. Multivariate analyses for ever having an overnight stay in a hospital or other facility to receive help for problems with emotions, mental health, or use of drug or alcohol

Groups	B	S.E.	Wald	P-value	OR	95% CI
Attachment						
Secure	1					
Avoidant	0.30	0.17	3.21	0.07	1.35	0.97-1.88
Anxious	0.10	0.31	0.11	0.74	1.11	0.61-2.02
Unclassified	-0.07	0.27	0.06	0.80	0.94	0.55-1.58
Age						
18-24	1					
25-44	0.57	0.25	5.19	0.02	1.77	1.08-2.88
45-64	0.81	0.25	10.17	0.001	2.24	1.37-3.69
65+	0.67	0.31	4.75	0.03	1.95	1.07-3.56
Household income						
<15,000	1					
15,001-30,000	-0.11	0.22	0.26	0.61	0.89	0.58-1.37
30,001-50,000	-0.59	0.23	6.63	0.01	0.56	0.36-0.87
50,001-70,000	-0.73	0.25	8.25	0.004	0.48	0.30-0.79
70,001-90,000	-0.83	0.33	6.51	0.01	0.44	0.23-0.83
>90,001	-0.90	0.27	11.40	0.001	0.41	0.24-0.69
Types of smokers						
Current	1					
Ex-smoker	-0.51	0.18	7.80	0.005	0.60	0.42-0.86
Never smoked	-1.24	0.21	34.18	<0.001	0.29	0.19-0.44
Only smoked a few times	0.67	0.47	2.01	0.16	0.51	0.21-1.29
Substance use						
No	1					
Yes	1.88	0.16	136.55	<0.001	6.52	4.76-8.93
Constant	-3.45	0.29	146.86	<0.001	0.03	

Table A2. Multivariate analyses for ever use an internet support group or chat room to get help for problems with emotions or nerves

Groups	B	S.E.	Wald	P-value	OR	95% CI
Attachment						
Secure	1					
Avoidant	0.53	0.31	3.00	0.08	1.70	0.93-3.11
Anxious	0.99	0.41	5.93	0.02	2.70	1.21-6.00
Unclassified	0.72	0.44	2.76	0.10	2.06	0.88-4.83
Depression						
No	1					
Yes	0.58	0.28	4.22	0.04	1.78	1.03-3.09
Anxiety						
No	1					
Yes	1.44	0.31	21.83	<0.001	4.23	2.31-7.73
Constant	-5.72	0.28	430.75	<0.001	0.003	

Table A3. Multivariate analyses for ever go to a self-help group for help with emotions or nerves

Groups	B	S.E.	Wald	P-value	OR	95% CI
Attachment						
Secure	1					
Avoidant	0.15	0.13	1.33	0.25	1.16	0.90-1.48
Anxious	0.31	0.20	2.25	0.13	1.36	0.91-2.02
Unclassified	0.14	0.20	0.50	0.48	1.15	0.78-1.69
Age						
18-24	1					
25-44	0.61	0.22	8.02	0.005	1.85	1.21-2.82
45-64	0.90	0.23	15.62	<0.001	2.47	1.58-3.87
65+	0.37	0.28	1.80	0.18	1.45	0.84-2.50
Sex						
Males	1					
Females	0.36	0.12	9.56	0.002	1.43	1.14-1.80
Marital status						
Married/Common-law	1					
Divorced/Sep/Wid	-0.18	0.16	1.13	0.29	0.84	0.61-1.16
Never married	0.29	0.18	2.59	0.11	1.34	0.94-1.92
Race						
Non-Latino White	1					
Others	-0.38	0.13	7.96	0.005	0.69	0.53-0.89
Depression						
No	1					
Yes	0.82	0.12	48.28	<0.001	2.27	1.80-2.85
Anxiety						
No	1					
Yes	0.75	0.12	40.37	<0.001	2.12	1.68-2.68
Substance use						
No	1					
Yes	1.12	0.12	82.14	<0.001	3.07	2.41-3.92
Constant	-4.11	0.21	368.69	<0.001	0.02	

Table A4. Multivariate analyses for ever use a hotline for problems with emotions or nerves

Groups	B	S.E.	Wald	P-value	OR	95% CI
Attachment						
Secure	1					
Avoidant	0.42	0.20	4.38	0.04	1.52	1.03-2.25
Anxious	0.70	0.28	6.21	0.01	2.02	1.16-3.50
Unclassified	-0.06	0.37	0.03	0.86	0.94	0.46-1.92
Age						
18-24	1					
25-44	0.80	0.33	5.95	0.02	2.22	1.17-4.22
45-64	0.72	0.36	4.08	0.04	2.05	1.02-4.12
65+	-0.48	0.55	0.75	0.39	0.62	0.21-1.84
Sex						
Males	1					
Females	0.73	0.20	13.24	<0.001	2.08	1.40-3.09
Marital status						
Married/Common-law	1					
Divorced/Sep/Wid	-0.58	0.24	5.67	0.02	0.56	0.35-0.90
Never married	-0.01	0.26	0.01	0.98	0.99	0.59-1.66
Depression						
No	1					
Yes	0.99	0.19	27.82	<0.001	2.68	1.86-3.86
Anxiety						
No	1					
Yes	1.18	0.22	29.98	<0.001	3.26	2.14-4.98
Substance use						
No	1					
Yes	0.90	0.20	21.43	<0.001	2.47	1.68-3.62
Chronic						
No	1					
Yes	0.76	0.31	6.14	0.01	2.14	1.17-3.91
Constant	-6.38	0.43	222.22	<0.001	0.002	

Table A5. Multivariate analyses for ever have a session of psychological counseling or therapy that lasted 30 minutes or longer with any type of professional

Groups	B	S.E.	Wald	P-value	OR	95% CI
Attachment						
Secure	1					
Avoidant	0.40	0.08	25.02	<0.001	1.49	1.27-1.73
Anxious	0.40	0.14	7.95	0.005	1.49	1.13-1.96
Unclassified	-0.01	0.13	0.01	0.97	1.00	0.78-1.28
Age						
18-24	1					
25-44	0.10	0.12	0.72	0.40	1.11	0.88-1.39
45-64	0.01	0.13	0.01	0.96	1.01	0.78-1.29
65+	-1.24	0.17	56.78	<0.001	0.29	0.21-0.40
Sex						
Males	1					
Females	0.33	0.07	23.06	<0.001	1.39	1.22-1.60
Education						
0-11,yr	1					
12, yr	0.09	0.11	0.68	0.41	1.09	0.89-1.35
13-15, yr	0.43	0.11	15.32	<0.001	1.54	1.24-1.91
>=16,yr	0.82	0.12	49.16	<0.001	2.27	1.81-2.85
Marital status						
Married/Common-law	1					
Divorced/Sep/Wid	0.07	0.10	0.51	0.48	1.07	0.88-1.31
Never married	0.55	0.12	20.87	<0.001	1.74	1.37-2.21
Race						
Non-Latino White	1					
Others	-0.61	0.08	56.44	<0.001	0.55	0.47-0.64
Types of smokers						
Current	1					
Ex-smoker	0.11	0.09	1.48	0.22	1.12	0.93-1.35
Never smoked	-0.33	0.09	14.72	<0.001	0.72	0.61-0.85
Only smoked a few times	-0.28	0.20	1.92	0.17	0.75	0.51-1.12
Depression						
No	1					
Yes	1.08	0.08	171.88	<0.001	2.94	2.50-3.46
Anxiety						
No	1					
Yes	0.75	0.07	107.90	<0.001	2.11	1.83-2.43
Substance use						
No	1					
Yes	0.82	0.09	76.32	<0.001	2.27	1.89-2.72
Chronic diseases						
No	1					

Yes	0.38	0.09	19.62	<0.001	1.46	1.23-1.72
Constant	-2.12	0.16	188.04	<0.001	0.12	