

Original research  
**Suicide Risk Factors in U.S. College Students: Perceptions Differ in Men and Women**

Neil Seeman<sup>1</sup>✉, Dennis K. Reilly<sup>2</sup>, Sean Fogler<sup>3</sup>

<sup>1</sup> RIWI Corp., 495 Bloor Street West, Suite 200, Toronto, Ontario, Canada M5S 1X9. Massey College, University of Toronto, 4 Devonshire Place, Toronto, Ontario, Canada, M5S 2E1. Institute for Health Policy, Management and Evaluation, University of Toronto, 155 College St., Toronto, Ontario, Canada, M5T 1P8

<sup>2</sup> 102e Centre Blvd., Marlton, NJ 08053, USA

<sup>3</sup> 1900 Hamilton Street, Unit C12, Philadelphia, PA 19130, USA

Submitted to SOL: September 26<sup>th</sup>, 2016; accepted: January 16<sup>th</sup>, 2017; published: February 8<sup>th</sup>, 2017

**Abstract:** The objective of this study was to conduct a survey of the general population addressing perceptions of suicide risk and suicide prevention in U.S. college students. We conducted an anonymous online survey and collected random opinions from a total of 3,762 Americans, of whom 1,583 self-identified as college-age students. We asked about factors contributing to suicide in college students, and for suggestions about means of prevention. The perception of relevant risk factors differed significantly between men and women. Males weighed competitive social pressures more heavily than women whereas women were more sensitive to relationship stress. With respect to preventive measures, no one method was significantly preferred to any other. The markedly different perceptions of men and women about suicide risks for college youth suggests that effective interventions need to include a variety of different approaches, some of which may need to be sex-specific.

**Keywords:** Suicide, College Students, Risk Factors, Gender Differences.

Copyrights belong to the Author(s). Suicidology Online (SOL) is a peer-reviewed open-access journal publishing under the Creative Commons Licence 3.0.

A significant number of students find college years stressful and emotionally difficult. Currently, more than 68% of American high school graduates attend postsecondary education, which results in approximately 20.5 million postsecondary students in the U.S. for 2016 (National Center for Education Statistics, 2016). According to the National College Health Assessment, nearly 10% of students report having been “so depressed it was difficult to function” over the past year and 1.6% admit to a suicide attempt during the year (The American College Health Association, 2008). That makes

about 2 million students in any given year seriously thinking of suicide and 300,000 making a suicide attempt. A 2009 study of 26,000 college students concluded that approximately 6% of undergraduates a year are seriously suicidal (Drum, Brownson, Denmark et al., 2009). In 2013, Ibrahim et al. conducted a systematic review of all studies of depression among university students (Ibrahim, Kelly, Adams et al., 2013). They found 24 articles that met their criteria and showed a combined prevalence rate for depression ranging from 10% to 85%, with a mean of 30.6%, which is substantially higher than reported rates in the general population.

Despite these worrisome statistics, completed suicide in college students in the U.S. is calculated at between 6.5 and 7.5 per 100,000 (Silverman,

✉ Neil Seeman, JD, MPH, 459 Bloor Street West, Suite 200, Toronto, Ontario, Canada M5S 1X9.  
[neil.seeman@utoronto.ca](mailto:neil.seeman@utoronto.ca) Tel: 1-416-205-9984 Ext. 235

Meyer, Sloane et al., 1997), lower than the national average for suicide (Schwartz, 2011), perhaps because of the inherent resilience of youth and, additionally, because of the relatively accessible and effective mental health care provided on college campuses.

Identifying risk factors for suicide is essential for the initiation and maintenance of suicide prevention measures, such as 24/7 telephone help lines, suicide prevention web sites, anti-bullying digital campaigns, physical and virtual support groups, counseling services (including financial counseling), alcohol and drug rehabilitations programs, social work and chaplaincy access in student residences, specialized outreach to isolated students, sports and activities programs, anti-stigma programs, and family liaison.

Many risk factors for suicide among young people have been identified, namely:

- a) male gender (Silverman et al., 1997). This is the case even though women students are more likely than male students to suffer from major depression and anxiety disorders (Eisenberg, Gollust, Golberstein et al., 2007);
- b) socioeconomic insecurity (Eisenberg et al., 2007; Hurst, Baranik & Daniel, 2012; Weitzman, 2004);
- c) relationship stressors (Hurst et al., 2012, Kisch, Leino, & Silverman, 2005); and,
- d) absence of social supports (Hefner & Eisenberg, 2009).

Academic workload, addictions, and minority status have also been mentioned as potentially contributory (Hurst et al., 2012; Weitzman, 2004). Mental health stigma often contributes to delays in help-seeking (Ahmedani, 2011).

We set out to determine which risk factors were considered most important by the general U.S. public and particularly by U.S. students.

## Method

The anonymous online survey method we used is based on Random Domain Intercept Technology or RDIT™ (Seeman, Ing, & Rizo, 2010; Seeman, Tang, & Brown, 2016), where random typing errors in the URL address bar exposes potential participants to a questionnaire to which they are free (or not) to respond. Respondents are only able to answer once from any one IP address. The suicide perceptions survey was accessible from June 6, 2016 to June 24, 2016 in all 50 US states and the District of Columbia. Exposure for 6 days was decided upon in advance in order to obtain an adequately large sample of respondents and in order to confirm the reproducibility of our findings. The questionnaire consisted of demographic questions (age, gender, student/non-student/field

of study) plus the following more specific questions:

- a) Have you ever had suicidal thoughts?
- b) Do you know students who have had suicidal thoughts?
- c) Do you know anyone who has attempted or committed suicide on campus?
- d) In your opinion, suicide of a college student occurs rarely, sometimes, or often?
- e) Which factor contributes most to suicide? Academic competition, Family pressure, Financial pressure, Heartbreak, Isolation, Marginalization, Prior Mental Health Difficulties, Substance abuse, Work overload, Other?
- f) Does mental health stigma play a role in campus suicide?
- g) Which of the following can best help prevent suicide? Organized group discussion, approachable faculty, accessible mental health services, relaxed confidentiality rules (between mental health facilities and families), more financial help, better outreach, other?

The identical questionnaire was exposed to the public on six different days during the specified June 2016 period.

## Results

### *Socio-demographic characteristics of the respondents*

Of 3,762 total responses, 2,347 were received from self-identified students, of which 1,583 were postsecondary school age 18 to 44 (51% male, 49% female). The ages of the student respondents were as follows: 12% were of ages 18 to 24; 18% were of ages 25 to 34; 16% were of ages 35 to 44; and 17% were of ages 45 to 54.

Thirty-two percent of the male college students were studying sciences; 18% were in the humanities. Thirty-five percent of women college students were in the sciences and 18% in the humanities (the remainder of the college students endorsed "other").

The non-student respondents included teachers, school and university administrators, healthcare professionals, family members, and individuals sufficiently interested in college student mental health to take the time to respond to the questionnaire.

### *Personal Experience of College Students*

Approximately 36% of the male college student respondents and 28% of the female college student respondents endorsed having had suicidal thoughts.

Approximately 33% of the male students and 31% of the female students knew fellow students who had had suicidal thoughts.

Approximately 29% of the male student respondents and 20% of the female student respondents knew fellow students who had attempted or committed suicide.

**Mental Health Stigma**

Approximately 35% of the male college student respondents and 32% of the female college student respondents endorsed the statement that mental health stigma played a role in the suicides of college students. About 26% of the males and 17% of the females believed it did not, while the remainder stated that they did not know.

**Gender Differences in Views of Suicide Determinants**

Among the total respondent sample of 3,762, there were significant differences of opinion between males and females as to the determinants of student suicide.

As specified in Table 1, male respondents endorsed the following risk factors more frequently than did female respondents: Academic competition; Financial pressure; Work overload.

In contrast, female respondents more than male respondents endorsed the following risk factors: Family pressure; Heartbreak; Mental health difficulties (Table 1).

Risk factor	Endorsed by Men	Endorsed by Women	p
Academic competition	8.7 ± 0.6%	4.1 ± 0.3%	<0.00001
Financial pressure	10.5 ± 0.4%	7.8 ± 0.4%	<0.001
Work overload	8.3 ± 0.2%	7.5 ± 0.2%	<0.02
Family pressure	4.2 ± 0.3%	11.5 ± 0.7%	<0.00001
Heartbreak	7.8 ± 0.5%	11 ± 0.7%	<0.005
Mental health difficulty	10.3 ± 0.5%	12.2 ± 0.5%	<0.016

There were no gender differences in opinions about isolation, marginalization, or substance abuse as potential suicide risk factors.

The differences between all male respondents and all female respondents are summarized in Figure 1.

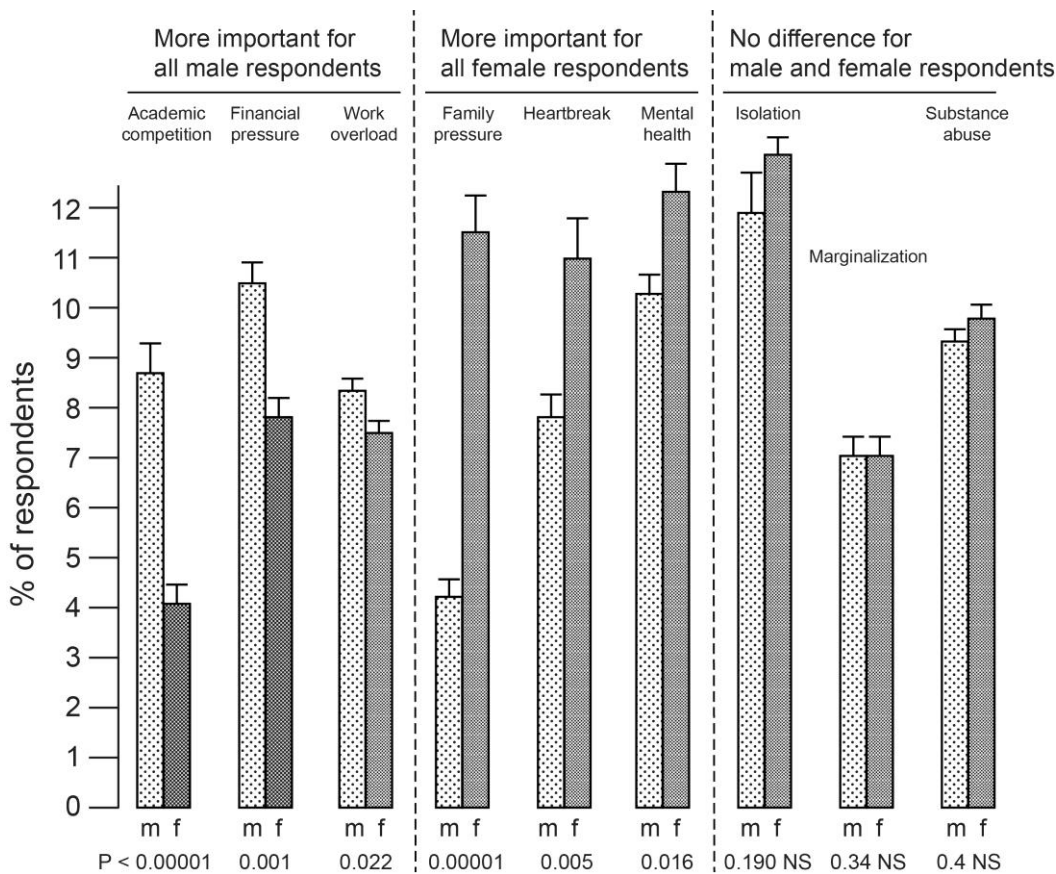


Figure 1

Showing the percent of all respondents (students, administrators, teachers, healthcare providers, family members) who provided their opinions on suicide risk factors for college student suicides. As compared to the all-women respondents ('f'), the all-male respondents ('m') considered academic competition, financial pressure, or work overload to be the most relevant. More women respondents, as compared to men, endorsed family pressure, heartbreak or prior mental difficulties. The error markers indicate the standard errors for six iterations of the questionnaire; the statistical p values are listed below. 'NS' indicates no statistical difference between male and female respondents for the factor shown.

When looking to see whether the same gender difference in views about risk factors was reflected among college student-only respondents, we found that it was, with the addition that more male students than the general population of males endorsed heartbreak and isolation as being relevant while more women students than the general population of females endorsed marginalization. These differences are summarized in Figure 1.

#### Prevention

Opinions about potentially preventive measures were divided more or less equally within the college student group:

- 16% endorsed better outreach to students;
- 14% endorsed organized group discussions;
- 14% endorsed more readily available mental health services;
- 13% endorsed more financial assistance;
- 12% endorsed more flexibility in sharing confidential information;
- 9% recommended that faculty become more approachable.

The student opinion appeared to be that all these suggestions might be somewhat helpful, but none particularly so.

#### Discussion

The major finding of this large population survey was that male respondents, as compared to female respondents, considered academic competition ( $8.7 \pm 0.6\%$  male vs  $4.1 \pm 0.3\%$  female;  $p < 0.00001$ ), financial pressure ( $10.5 \pm 0.4\%$  male vs  $7.8 \pm 0.4\%$  female;  $p < 0.001$ ), and work overload ( $8.3 \pm 0.2\%$  male vs  $7.5 \pm 0.2\%$  female;  $p < 0.02$ ) to be critical determinants of suicide (Fig. 1) whereas women respondents more than their male counterparts were sensitive to the potential harms of heartbreak, family pressure and prior mental illness. To generalize from the findings, in the context of suicide, **men** seem to weigh competitive social pressures more heavily than women (see Van Vugt, De Cremer, & Janssen, 2007 for the evolutionary roots of this gender difference) whereas women are more sensitive to relationship stress (O'Neill & Gidengil, 2013).

In the college student-only subgroup, males also endorsed heartbreak and isolation as risk factors for suicide, a finding that has age-appropriate and college situation-appropriate surface validity while women students endorsed marginalization (Table

1). This too is college situation-appropriate because it is on campus rather than in everyday life that students, especially female students because compassion is reported to be more of a female trait (Christov-Moore, Simpson, Coudé et al., 2014), are likely to come face to face with the effects of marginalization of students considered as 'other.'

Gender differences in the general population or in student views about perceived suicide risk factors have not previously been reported. Gale, Hawley, Butler et al. (2016) found that female mental health professionals were significantly more cautious when appraising suicide risk from a written vignette attached to a facial image than were male professionals. When studying college students, however, Mitchell (2015) found no gender difference in the ability to identify suicidal risk.

Some differences have been found between men and women of college age in factors that lead to suicide. Chief among these is the well-known increased prevalence of prior depression in women compared to men (Brownson, Drum, Smith et al., 2011; Lamis & Lester, 2013; Stephenson, Pena-Shaff, & Quirk, 2006), which may explain why women respondents endorse prior mental illness more often than men when asked about risk factors for suicide.

Surveys about sensitive topics such as suicide are difficult to conduct (Tourangeau & Yan, 2007), unless they can be done anonymously, as this survey was able to do. The finding that one-third of students acknowledged having had suicidal thoughts confirms previous work (The American Health College Association, 2008; Drum et al., 2009). About one quarter of students knew someone who had attempted, successfully or unsuccessfully, to kill him(herself). This percentage is likely to increase with the continued expansion of open communication on social network sites.

Interestingly, while a third of students believed that mental health stigma played an important role in student suicides, approximately one fifth did not believe it did. The questionnaire was brief and did not distinguish between self-stigma and the perception of stigmatizing attitudes on the part of others. Self-stigma, the internalization of negative stereotypes, leads to low self-esteem, shame and hopelessness and has been shown to be closely associated with suicidal thoughts (Oxle, Rüsche, & Viering, 2016). Because of perceived stigma, confidentiality is especially strict around mental illness concerns. This can be a problem when mental health information is not shared among those in the best position to assist, family members being the most obvious example. Most

university mental health services withhold mental health information from families but usually will make exceptions for imminently dangerous situations.

The causes of suicidal behavior are not well understood; the evidence in the literature points to complex interactions of different factors. Gender differences in perspectives and the failure of any suicide prevention solutions being endorsed over others suggest that suicide on campus can only be addressed by multi-pronged intervention strategies tailored to diverse needs. The results of this research suggest that the suicide risk status of male students rises in proportion to academic competition, financial pressure, and work overload while, for female students, it is especially high for those with a history of mental illness and for those experiencing family pressure, and social isolation. Both male and female students are at high risk during periods of relational turmoil and heartbreak. Counselors need to be attuned to these gender differences because risk formulation forms the basis of all preventive measures.

Although there is substantial variation among U.S. campuses, according to the 2009 survey of the American College Counseling Association (Gallagher, 2009), the overall ratio of students to psychological counselors is about 1,527:1, with higher ratios at larger institutions. Effective suicide prevention requires more well-trained personnel and innovative methods of reaching students in need. All students and faculty need to be aware of mental health issues and need training in how to proceed under various circumstances. The QPR (Question, Persuade, Refer) program educates faculty and staff on becoming more effective "gatekeepers" (See: <http://www.qprinstitute.com> for further information). Because some students will disclose problems only to other students, gatekeeper peers may be especially important (Hennig, Crabtree, & Baum, 1998). Some campuses have developed phone triage programs set up to offer prompt evaluations (Rockland-Miller & Eells, 2006). Combining academic mentoring and mental health support is a realistic idea designed to overcome barriers to accessing mental health services (Bilodeau & Meissner, 2016; Robinson, Jubenville, Renny et al., 2016).

#### Limitations

One drawback to this study is that it was limited to English speakers. There are many new non-English speaking college students in the United States who feel marginalized and, as a consequence, may be especially vulnerable to suicide but may not participate in an English-only survey. Another limitation is that, in the general population, more

men than women have access to the Internet, but this gender difference would, of course, not apply to college students. There were no questions in this survey about race or religion or sexual orientation, the answers to which would have been informative and helpful; this is for future study. There were no questions about the effect on campus suicide of the Werther and Papageno effects – the boosting or lowering of the local prevalence of suicide depending on how the media reports student suicides (Niederkrötenhaler, Voracek, Herberth et al., 2010). The survey was brief and far from exhaustive in terms of listing potential determinants of suicide and potentially effective preventive measures. The addition of more choices would have potentially contributed further information.

#### Conclusion

Given the many risk factors associated with campus suicide and the diverse views (as exemplified by male/female differences) as to which ones are the most important, it is difficult for college administrators to agree on the constituents of effective suicide prevention programs. Administrators need to focus on both stigma reduction and on facilitating access to quality treatment for mental illness (Thorncroft, Mehta, & Clement, 2016), while, at the same time, promoting positive mental health (Drum & Denmark, 2012). The Jed Foundation and Education Development Center, Inc. have developed a useful framework (The Jed Foundation, 2016) to help colleges and universities support students in emotional need and to promote mental health on campus for everyone.

#### Acknowledgements

This project was supported by RIWI Corp. and partly by the SZ Fund at Massey College, University of Toronto, Toronto, Ontario, Canada.

#### References

- Ahmedani, B. K. (2011). Mental health stigma: society, individuals, and the profession. *Journal of Social Work Values and Ethics*, 8, 4.1–4.16.
- Bilodeau, C., & Meissner, J. (2016). The effects of a combined academic and personal counselling initiative for post-secondary student retention. *Canadian Journal of School Psychology*, 1-18 [epub ahead of print] doi: 0829573516644554.
- Brownson, C., Drum, D.J., Smith, S.E., et al. (2011). Differences in suicidal experiences of male and female undergraduate and graduate students.

- Journal of College Student Psychotherapy*, 25, 277-294. doi: 10.1080/87568225.2011.605692
- Christov-Moore, L., Simpson, E.A., Coudé, G. et al. (2014). Empathy: Gender effects in brain and behavior. *Neuroscience & Biobehavioral Reviews*, 46, 604-627.
- Drum, D.J., Brownson, C., Denmark, A.B. et al. (2009). New data on the nature of suicidal crises in college students: Shifting the paradigm. *Professional Psychology Research and Practice*, 40, 213-222.
- Drum, D.J., & Denmark, A.B. (2012). Campus Suicide Prevention: Bridging Paradigms and Forging Partnerships. *Harvard Review of Psychiatry*, 20, 209-221.
- Eisenberg, D., Gollust, S.E., Golberstein, E. et al. (2007). Prevalence and correlates of depression, anxiety, and suicidality among university students. *American Journal of Orthopsychiatry*, 77, 534-542.
- Gale, T.M., Hawley, C.J., Butler, J. et al. (2016). Perception of suicide risk in mental health professionals. *PLOS One* 11, e0149791 doi: 10.1371/journal.pone.0149791
- Gallagher, R.P. (2009). National Survey of Counseling Center Directors 2009 [http://www.collegecounseling.org/pdf/nsccd\\_final\\_v1.pdf](http://www.collegecounseling.org/pdf/nsccd_final_v1.pdf). Accessed August 31, 2016
- Hefner, J.L., & Eisenberg, D. (2009). Social support and mental health among college students. *American Journal of Orthopsychiatry*, 79, 491-499. doi: 10.1037/a0016918.
- Hennig, C.W., Crabtree, C.R., & Baum, D. (1998). Mental Health CPR: peer contracting as a response to potential suicide in adolescents. *Archives of Suicide Research*, 4, 169-187.
- Hurst, C.S., Baranik, L.E., & Daniel, F. (2013). College student stressors: A review of the qualitative research. *Stress and Health*, 29, 75-85. doi: 10.1002/smi.2465
- Ibrahim, A.K., Kelly, S.J., Adams, C.E., et al. (2013). A systematic review of studies of depression prevalence in university students. *Journal of Psychiatric Research*, 47, 391-400.
- Kisch, J., Leino, E.V., & Silverman, M.M. (2005). Aspects of suicidal behavior, depression, and treatment in college students: results from the Spring 2000 National College Health Assessment Survey. *Suicide and Life-Threatening Behavior*, 35, 3-13.
- Lamis, D.A., & Lester, D., (2013). Gender differences in risk and protective factors for suicidal ideation among college students. *Journal of College Student Psychotherapy*, 27, 62-77.
- Mitchell, J. (2015). College students' knowledge of suicide risk factors and prevention strategies Departmental Honors Projects. Paper 36. <http://digitalcommons.hamline.edu/cgi/viewcontent.cgi?article=1043&context=dhp> Accessed Aug. 31, 2016.
- NCES (National Center for Education Statistics). (2016). Fast Facts. <http://nces.ed.gov/fastfacts/display.asp?id=372> Accessed Aug. 31, 2016.
- Niederkroenthaler, T., Voracek, M., Herberth, A., et al. (2010). Role of media reports in completed and prevented suicide: Werther v. Papageno effects. *British Journal of Psychiatry*, 197, 234-43. doi: 10.1192/bjp.bp.109.074633
- Oexle, N., Rüsck, N., & Viering, S. (2016). Self-stigma and suicidality: a longitudinal study. *European Archives of Psychiatry and Clinical Neuroscience*, e1-3.
- O'Neill, B., & Gidengil, E. eds. (2013). Gender and Social Capital. Routledge, Abingdon-on-Thames, U.K.
- Robinson, A.M., Jubenville, T.M., Renny, K., et al. (2016). Academic and mental health needs of students on a Canadian campus. *Canadian Journal of Counselling and Psychotherapy*, 50, 108-123.
- Rockland-Miller, H.S., & Eells, G. (2006). The implementation of mental health clinical triage systems in university health services. *Journal of College Student Psychotherapy*, 20, 39.
- Seeman, N., Ing, A., & Rizo, C. (2010). Assessing and responding in real time to online anti-vaccine sentiment during a flu pandemic. *Healthcare Quarterly*, 13 Spec No:8-15.
- Seeman, N., Tang, S., & Brown, A.D. (2016). World survey of mental illness stigma. *Journal of Affective Disorders*, 190, 115-121.
- Schwartz, A.J. (2011). Rate, relative risk, and method of suicide by students at 4-year colleges and universities in the United States, 2004-2005 through 2008-2009. *Suicide and Life-Threatening Behavior*, 41, 353-371.
- Silverman, M.M., Meyer, P.M., Sloane, F. et al. (1997). The Big Ten Student Suicide Study: a 10-year study of suicides on midwestern university

- campuses. *Suicide and Life-Threatening Behavior*, 27, 285–303.
- Stephenson, H., Pena-Shaff, J., & Quirk, P. (2006). Predictors of college student suicidal ideation: Gender differences. *College Student Journal*, 40, 109-117.
- The American College Health Association. (2008). American College Health Association -National College Health Assessment: Spring 2007. Reference group data report (abridged). *Journal of American College Health*, 56, 469-479.
- The Jed Foundation. (2016). Promoting emotional health and preventing suicide. <https://www.jedfoundation.org/professionals/programs-and-research/campusmhap>. Accessed Aug. 31, 2016.
- Thornicroft, G., Mehta, N., Clement, S. (2016). Evidence for effective interventions to reduce mental-health-related stigma and discrimination. *Lancet*, 387, 1123-1132.
- Tourangeau, R., & Yan, T. (2007). Sensitive questions in surveys. *Psychological Bulletin*, 133, 859–883.
- Van Vugt M., De Cremer D., & Janssen D.P. (2007). Gender differences in cooperation and competition the Male-Warrior hypothesis. *Psychological Science*, 18, 19-23.
- Weitzman, E.R. (2004). Poor mental health, depression, and associations with alcohol consumption, harm, and abuse in a national sample of young adults in college. *Journal of Nervous and Mental Disease*, 192, 269–277.