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## Frequency of Instagram Use and the Presence of Depressive Symptoms in Young Adults

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# Frequency of Instagram Use and the Presence of Depressive Symptoms in Young Adults

## Abstract

**Background:** Depression is one of the most common mental health conditions among patients seen in primary care. It is estimated that without routine screening methods, only 50 percent of patients with depression are identified in clinic. Depression screening improves diagnosis rates, but clinical outcomes are only improved if screening is included in patient-provider encounters. If depression can be detected, it can usually be successfully treated. As the number of social media platforms, like Instagram, and the number of their users grow rapidly, finding a correlation between frequency of use and depressive symptoms in young adults would call for an imperative change in screening methods for depression.

**Methods:** An exhaustive literature search using MEDLINE-PubMed, CINAHL, and Web of Science was performed using the search terms “depression,” “social media,” and “young adult.” The articles were then searched for specific mention of “Instagram” and those that did not include Instagram specifically in the study were excluded. The “similar articles” search option on MEDLINE-PubMed and references within articles that met exclusion criteria were searched as well. The resulting studies that met criteria were then appraised and assessed for quality with GRADE.

**Results:** Two studies that met inclusion and exclusion criteria were included in the systematic review. One cross-sectional study showed that social media use, including Instagram, was significantly associated with increased depressive symptoms. Furthermore, participants in the highest quartile of total time per day spent on social media had significantly greater odds of having depressive symptoms. The second cross-sectional study revealed that for participants who followed high amounts of strangers, a statistically significant relationship was found between increased frequency of Instagram use and increased depressive symptoms.

**Conclusion:** Presence of depressive symptoms and Instagram use in young adults correlate. The evidence points to a relationship between an increased frequency of Instagram use and the presence of depressive symptoms. Providers should continue screening patients for depression following the current guidelines but should remain aware of the relationship between frequency of Instagram use and depressive symptoms. If risk factors in patients’ social media habits are present, providers should consider administering depression screening for further investigation of possible depressive symptoms.

**Keywords:** Instagram, depression, young adults, social media

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Instagram, Depression, Young Adults, Social Media

## Subject Categories

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# **Frequency of Instagram Use and the Presence of Depressive Symptoms in Young Adults**

**Alissa Smouse & Steven Hernandez**

**Pacific  
University  
Oregon**



**A Clinical Graduate Project Submitted to the Faculty of the  
School of Physician Assistant Studies**

**Pacific University  
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Clinical Graduate Project Coordinator: Annjanette Sommers,  
PA-C, MS**

**Biography**

Alissa Smouse is a native of Pennsylvania where she majored in Biological Sciences and Health Professions and minored in Microbiology at Pennsylvania State University. During her undergraduate education, she worked as an emergency department scribe then later became chief scribe and managed the scribe program at Mt. Nittany Medical Center. She also enjoys singing acapella and hopes to pursue a career as a physician assistant in emergency medicine or pediatric inpatient medicine.

Steven Hernandez is a native of California where he majored in Healthcare Administration at California State University of Northridge. His clinical background is working as an emergency department scribe and emergency medical technician. He also enjoys snowboarding, rock climbing, and surfing, and is interested in pursuing a career as a physician assistant in emergency medicine.

## Abstract

**Background:** Depression is one of the most common mental health conditions among patients seen in primary care. It is estimated that without routine screening methods, only 50 percent of patients with depression are identified in clinic. Depression screening improves diagnosis rates, but clinical outcomes are only improved if screening is included in patient-provider encounters. If depression can be detected, it can usually be successfully treated. As the number of social media platforms, like Instagram, and the number of their users grow rapidly, finding a correlation between frequency of use and depressive symptoms in young adults would call for an imperative change in screening methods for depression.

**Methods:** An exhaustive literature search using MEDLINE-PubMed, CINAHL, and Web of Science was performed using the search terms "depression," "social media," and "young adult." The articles were then searched for specific mention of "Instagram" and those that did not include Instagram specifically in the study were excluded. The "similar articles" search option on MEDLINE-PubMed and references within articles that met exclusion criteria were searched as well. The resulting studies that met criteria were then appraised and assessed for quality with GRADE.

**Results:** Two studies that met inclusion and exclusion criteria were included in the systematic review. One cross-sectional study showed that social media use, including Instagram, was significantly associated with increased depressive symptoms. Furthermore, participants in the highest quartile of total time per day spent on social media had significantly greater odds of having depressive symptoms. The second cross-sectional study revealed that for participants who followed high amounts of strangers, a statistically significant relationship was found between increased frequency of Instagram use and increased depressive symptoms.

**Conclusion:** Presence of depressive symptoms and Instagram use in young adults correlate. The evidence points to a relationship between an increased frequency of Instagram use and the presence of depressive symptoms. Providers should continue screening patients for depression following the current guidelines but should remain aware of the relationship between frequency of Instagram use and depressive symptoms. If risk factors in patients' social media habits are present, providers should consider administering depression screening for further investigation of possible depressive symptoms.

**Keywords:** *Instagram, depression, young adults, social media*

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## **List of Abbreviations**

|        |  |
|--------|--|
| USPSTF | United States Preventative Services Task Force           |
| PHQ    | Patient Health Questionnaire                             |
| PROMIS | Patient-Reported Outcomes Measurement Information System |
| DSM 5  | Diagnostic and Statistical Manual of Mental Disorders 5  |
| PHQ 9  | Patient Health Questionnaire                             |



## **Frequency of Instagram use and the Presence of Depressive Symptoms in Young Adults**

### **BACKGROUND**

Depression is one of the most common mental health conditions among patients seen in primary care.<sup>1</sup> The rising incidence of depression and associated healthcare costs are not only a burden the patient but also a fiscal burden to the United States Healthcare System.<sup>2</sup>

While major depressive disorder can develop at any age, the median age of onset is 32.5 years old.<sup>3</sup> Additionally, 6.7 percent of the U.S. population age 18 and older are affected by major depressive disorder each year according to the 2014 National Survey on Drug Use and Health<sup>3</sup> performed by the Substance Abuse and Mental Health Services Administration, a branch of the U.S. Department of Health and Human Services.

Depression screening improves diagnosis rates, but clinical outcomes are only improved if screening is included in patient-provider encounters. The 2016 US Preventative Services Task Force (USPSTF) recommends screening for depression in the general adult population because treating adults with depression by using psychotherapy, antidepressants, or both is found to decrease clinical morbidity.<sup>4</sup> With the number of social media platforms, like Instagram, and their users growing rapidly, finding a correlation between frequency of use and

depressive symptoms in young adults would call for an imperative change in screening methods of depression.

Instagram is an online social networking platform created in 2010 that allows users the ability to share photos and videos that they have taken with their smartphone. The user has the option to select filters and upload the image or video to multiple different social media platforms once uploaded to Instagram. Instagram also allows users to comment on the photos and videos posted by those they follow.<sup>5</sup> The use of Instagram has proliferated to an all-time high with over 600 million users and counting.<sup>6</sup> It is known that social media use, especially Facebook, has been linked to depression, loneliness, and low self-esteem.<sup>7-9</sup> However, there are limited amounts of studies that address the relationship between Instagram use and depressive symptoms.

To clinically diagnose major depressive disorder, the Diagnostic and Statistical Manual of Mental Disorders (DSM 5) requires a minimum of 5 depressive symptoms that persist within the same 2 weeks. This must represent a change from baseline and at least 1 of the symptoms must be a depressed mood and or loss of interest or pleasure.<sup>10</sup> Other common depressive symptoms include but are not limited to feelings of hopelessness, worthlessness, and helplessness. According to the World Health Organization<sup>11</sup> there is an estimated 350

million people globally that suffer from depression and it is the leading cause of disability. Family, work, and school involvement often suffers when a person has depression. Therefore it is essential that patients presenting with depressive symptoms are clearly identified and treated early.

Primary care providers often utilize depression screening tools such as the Patient Health Questionnaire 9 (PHQ 9) to assist in identifying patients at risk for a major depressive episode. However, there are no definitive guidelines that state when to screen patients. According to studies conducted by Tylee<sup>12</sup> and Simon et al,<sup>13</sup> patients typically do not discuss their depressive symptoms with their primary care providers and often present instead with somatic symptoms which makes depression difficult to detect. It is estimated that without routine screening methods, only 50 percent of patients with depression are identified in clinic.<sup>1</sup> If depression can be detected, it can usually be successfully treated. By investigating the relationship between frequency of use of Instagram and its association with depressive symptoms in young adults, a new risk factor for depression can be identified and will prompt health care providers to screen patients who may not typically receive screening.

## **METHODS**

An exhaustive literature search using MEDLINE-PubMed, CINAHL, and Web of Science was performed using the search terms “depression,” “social media,” and “young adult.” All articles that did not include Instagram in their definition of social media were excluded. The “similar articles” tab on MEDLINE-PubMed and the references within articles that met inclusion and exclusion criteria were searched as well. Studies conducted on patient populations of young adults between the ages of 18-32 who use social media, specifically Instagram, were included. Studies had to classify use of social media in some range of high versus low frequency. The studies also had to evaluate the relationship between frequency of Instagram use and presence of depressive symptoms. Studies were excluded if they were not in the English language, not published within the last 5 years, not performed on human subjects, and had a study population of  $n < 100$ . The resulting studies that met criteria were then appraised and assessed for quality with GRADE.<sup>14</sup>

## **RESULTS**

The initial search yielded 56 articles for review. After screening these results for relevant articles using eligibility criteria, there were a total of two articles<sup>15,16</sup> remaining. These articles were cross sectional

studies (See Table 1). Another cross sectional study<sup>17</sup> was considered; however, it did not meet the inclusion criteria of age requirement.

### **Lin et al**

This study<sup>15</sup> was a cross sectional study which analyzed social media use in young adults and its association with depression. Social media as defined by this article included Instagram, Snapchat, Pinterest, Reddit, Vine, Twitter, Tumblr, LinkedIn, Youtube, Google+, and Facebook. The study looked at a number of variables which included social media use in time per day and visits per week. The variables of age, sex, race, household income, relationship status, and education level were also evaluated. The participants were comprised of a sample population size of n= 1787 all of whom were recruited via randomized address-based automated calling. The participant demographics were 50.3% female, 57.5% White, 13.0% African American, 20.6% Hispanic, and 8.9 % other. Educational level varied as 36% of participants had no college degree and 25.8% had a Bachelor of Arts degree or higher.<sup>15</sup>

A 4-item scale developed by the Patient-Reported Outcomes Measurement Information System (PROMIS)<sup>18</sup> was utilized to determine if the population surveyed met depression criteria. The PROMIS depression scale has demonstrated validity and applicability with clinical depression screening tools such as the Center for

Epidemiological Studies Depression Scale and the PHQ-9.<sup>19</sup> The PROMIS scale measured the frequency of 4 depressive symptoms including how often participants felt hopeless, worthless, helpless, or depressed over the past week.<sup>20</sup> The frequency of each one of the 4 depressive symptoms was ranked on a 1-5 point scale representing "never," "rarely," "sometimes," "often," and "always" experiencing the depressive symptoms for total scores ranging from 4 to 20 points. These scores were then further separated into "low," "medium," and "high" levels of depressive symptoms with the "low" group representing total scores of 4 out of 20 and the "high" group representing total scores of 9 or more out of 20. The "high" group was comprised of participant scores that met the clinical cutoff for depression recommended by the American Psychiatry Association and made up 26.3% of the study population. The "low" group made up 44.5% of the study population.<sup>15</sup>

To measure frequency of time spent on social media sites daily, participants self-reported amount of total time spent on specific social media platforms choosing between the following options of 0-30 minutes per day, 31-60 minutes per day, 61-120 minutes per day, and 121 and above minutes per day. Weekly amount of time spent on social media was then extrapolated from the data collected. The study

demonstrated that the median time of social media use was 61 minutes per day.<sup>15</sup>

Bivariable analyses demonstrated significant associations between social media use and depressive symptoms along with associations with other variables such as age, sex, race/ethnicity, and education level. Females and those with a lower education fell into the “high” depression group. Younger females showed an increased amount of time spent on social media, which included Instagram use. Multivariable analysis showed those who spent a greater amount of time on social media reported a greater depression score. Participants in the highest quartile of total time per day on social media had significantly greater odds of having depression (AOR 1.66, 95% CI 1.14-2.42).<sup>15</sup>

Limitations noted by the authors include the inability to evaluate empirical data from the social media site due to large volume of participants. The scale<sup>18</sup> utilized was maxed out at frequency of use of 5 or more times per day versus other scales which utilize “several times per hour” or “all the time.”<sup>21</sup> Participants also did not have a formal evaluation to see if they met DSM 5 clinical criteria for depression.<sup>15</sup>

## **Lup et al**

This cross-sectional study<sup>16</sup> investigated the association between frequency of Instagram use and depressive symptoms through the moderators of negative social comparison to others and amount of strangers participants followed on Instagram. All participants were recruited via a post on the first author's Facebook page calling for study participants. This post was shared by other users to further enlarge the sample pool.<sup>16</sup>

Initially 187 individuals consented to participate in online questionnaires gathering information about demographics, frequency of Instagram use, amount of strangers followed on Instagram, scores on the Center for Epidemiological Resources Scale for Depression, and scores on the Social Comparison Rating Scale. The final study sample size was made up of 117 participants who completed all of the questionnaires, minus one participant identified as a multivariate outlier. The sample was primarily comprised of white/European American (83%) females (84%). Seven percent of participants identified as multiracial/ethnic or other, 7% were Latino/Hispanic, 3% were Asian/Pacific Islander, 1% were black/African American. Six percent have a high school degree/GED, 20% completed some college, 3% completed trade/vocational training, 49% had a Bachelor's degree, 18% held a Master's degree, and 5% held a professional degree.



Eighty eight percent identified their sexual orientation as heterosexual, 5% bisexual, 3% gay/lesbian, 3% questioning, and 1% refused. Mean age was 24.81 years with a SD of 2.51 years.<sup>16</sup> Refer to Table 2: Demographic Characteristics of Lup et al<sup>16</sup> Study Population.

Through the use of questionnaires, this study evaluated the measures of Instagram use, strangers followed, social comparison, and depressive symptoms. To quantify *Instagram use*, participants reported how much time they spent on Instagram daily (10 minutes or less, 11-30 minutes, 31-60 minutes, 1-2 hours, and 2-3 hours). In order to quantify *strangers followed*, participants reported the total number of strangers they followed and the total number of people they followed. A score indicating the percentage of strangers followed on Instagram was then derived. In order to measure *social comparison*, 4 out of 11 items from the Social Comparison Rating Scale were determined relevant to the experience of viewing profiles of friends and strangers and were included in the investigation. The 4 chosen measures (how confident, attractive, desirable, and inferior one feels in comparison to others on Instagram) were taken from a previously conducted study<sup>22</sup> that used the same 4 measures to assess the tendency to compare oneself socially to others on Facebook. Participants rated their feelings on a scale with 10 possible points. Higher scores indicated more positive social comparison. *Depressive*

*symptoms* were measured using the 20-item Center for Epidemiological Studies Depression scale.<sup>16</sup>

The study then examined whether any demographic characteristics (see Table 2) were related to social comparison or depression. A statistically significant difference was present for sexual orientation on *social comparison*. Heterosexual individuals had more positive *social comparison* as shown by higher scores than those with other sexual orientations. Sexual orientation was therefore included as a control variable in subsequent analyses. No other demographic characteristics proved to be significant variables needing to be controlled for in subsequent analyses.<sup>16</sup>

The study showed that Instagram use has negative associations with well-being for those who follow many strangers, but positive associations with well-being for those who follow few strangers. For those participants who follow high amounts of strangers only (the 75<sup>th</sup> and 90<sup>th</sup> percentile of strangers followed), it was found to be statistically significant that increased frequency of Instagram use was associated with increased depressive symptoms (75<sup>th</sup> percentile [95% CI 0.04 to 0.28]  $p=0.012$ , 90<sup>th</sup> percentile [95% CI 0.05 to 0.39]  $p=0.013$ ). For those participants at lower levels of strangers followed, the relationship between Instagram use and depressive symptoms was not statistically significant. However, for those participants who

followed the lowest amount of strangers (10<sup>th</sup> percentile), there was a trend that high frequency use of Instagram actually had decreased depressive symptoms via the moderator of positive social comparison ([95% CI 0.03 to 3.38] p=0.046).<sup>16</sup>

The authors noted a few limitations with the study. One limitation includes a lack of clear definition of “stranger” to differentiate between complete stranger, distant acquaintance, and good friend. A more precise method of evaluating depression and Instagram use through the moderator of social comparison would be to include more psychological traits known to affect social comparison. Also, exploring the immediate impact of Instagram on patient mood would allow for a better understanding of the processes. The cross sectional nature of the study makes it challenging to determine the longer-term effects of Instagram use on depression, so correlational claims and not causal claims can only be made at this time.<sup>16</sup>

## **DISCUSSION**

According to the World Health Organization,<sup>11</sup> depression strikes all age groups and is the leading cause of disability worldwide. When severe, depression can be devastating and ultimately lead to suicide. The Center for Disease Control and Prevention’s Injury Prevention and Control statistics show that in 2014, suicide was the second leading cause of death for those between the ages of 15 to 34 years old.<sup>23</sup>

Despite efforts to identify and treat depression, there is still little evidence<sup>4</sup> recommending effective timing for when to screen making identification of the disorder more difficult. Both articles<sup>15,16</sup> evaluated in this review used clinical depression screening tools to reveal a link between frequency of Instagram use and depressive symptoms in young adults. With over 600 million individuals using Instagram,<sup>6</sup> more attention must be given to investigating this relationship so patients may be queried about Instagram use so as to assess their risk for depressive symptoms. Therefore, patients presenting with Instagram usage risk factors can be screened for depressive symptoms even if they do not fit the typical depression screening guidelines currently in place. If more patients receive depression screening, more patients will benefit from early recognition and treatment of depression.

While there seems to be a direct correlation between frequency of Instagram use and presence of depressive symptoms in young adults as shown by both articles,<sup>15,16</sup> certain moderating factors, most importantly number of strangers followed and positive versus negative social comparison, may play an integral role in the presence of depressive symptoms in this population. The current findings suggest that following a high amount of strangers (defined as the top 75th and 90th percentiles) on Instagram correlates with negative social

comparison (defined as feeling less confident, less attractive, less desirable, and more inferior in comparison to others on Instagram) and the presence of depressive symptoms. However, if one follows a high percentage of people they know and the lowest amount of strangers (defined as the 10th percentile and lower), then they are not at risk for depressive symptoms because they have more positive social comparisons. By evaluating amount of strangers followed first and then looking at frequency of Instagram use, compelling trends and statistically significant correlations can be found between frequency of use, social comparison, and depressive symptoms.

While these results are telling, it is important to remember that the relationship under investigation is multifactorial and many more studies need to be performed in order to identify the most important factors in this complex web. Frequency of Instagram use alone is only one factor potentially contributing the presence of depressive symptoms. Other confounders that must be investigated further include the relationship between depressive symptoms, number of strangers participants follow, and positive versus negative social comparisons. The terms "strangers" and "social comparison" must be more clearly defined so more studies can be done to replicate these results.

While waiting for further studies to be completed, it would be wise for medical providers to continue to follow current screening guidelines for depression and also to discuss social media use, especially of Instagram, with their young adult patients. The USPSTF states that “there is little evidence regarding the optimal timing for [depression] screening.... A pragmatic approach in the absence of data might include screening all adults who have not been screened previously and using clinical judgment in consideration of risk factors, comorbid conditions, and life events to determine if additional screening of high-risk patients is warranted.”<sup>4</sup> If risk factors in their patients’ social media habits are present, providers should consider administering a depression screening tool such as the Patient Health Questionnaire (PHQ) or other related surveys for further investigation of possible depressive symptoms.

The impact of knowing that there is a correlation between frequency of Instagram use and the presence of depressive symptoms can help clinicians identify potential maladaptive patterns of use of Instagram which may be contributing to their patient's mood dysregulation. For example, in a depressed young adult patient it could be beneficial to evaluate if the number of strangers they follow on Instagram is high or low because this association could contribute to their type of social comparison and depressive symptoms. Then, the

clinician can suggest the patient either unfollow strangers on Instagram, decrease their frequency of use of Instagram, or even decrease use of social media all together.

Although the overall quality of these studies is very low, the findings should not be ignored. The explosive growth of social media platforms over the past few years has outpaced the ability to perform high quality, longitudinal research exploring the effects of social media use on mental health. For clinicians, using frequency of Instagram usage as a risk factor for screening for depression carries virtually no risks of harm. Thus, providers should consider talking to their young adult patients about their frequency of Instagram use and amount of strangers they follow to determine if that patient needs to be screened for depression.

The very low quality of these studies is shown in these main limitations. The Lin et al<sup>15</sup> study evaluated social media as a conglomeration of multiple platforms and did not perform separate research for just Instagram alone. This lack of separation makes it challenging for clinicians to easily identify which social media site is contributing to their patients' depressive symptoms. Both articles<sup>15,16</sup> used self-reporting as a method of gathering data, but self-report may present skewed results due to flawed participant recall. Both studies<sup>15,16</sup> are also cross sectional in nature, so it may be difficult to

determine which aspects of the studies play the most significant role in applying these results to future situations. The two studies also did not provide participants with an evaluation by a health care provider to determine if their rating of depressive symptoms were actually clinically significant predisposing factors to depression. To improve application of these results in clinical practice, further studies should be performed in a longitudinal fashion, focus on one social media platform instead of many combined together, and include actual clinical evaluation of patients' depressive symptoms.

## **CONCLUSION**

Presence of depressive symptoms and Instagram use in young adults are correlated. These studies show that following numerous strangers on Instagram correlates with a negative social comparison and increased depressive symptoms. While these results are telling, it is important to remember that the relationship under investigation is multifactorial and many more studies need to be performed. Providers should continue screening patients for depression following the current guidelines but should remain aware of the relationship between frequency of Instagram use and depressive symptoms in young adults. If risk factors in patients' social media habits are present, providers should use their clinical judgment and consider administering



depression screening for further investigation of possible depressive symptoms.

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Published June 24, 2015. Accessed July 15, 2016.

| <b>Table 1: Quality Assessment of Reviewed Articles</b>  |                                   |                           |                          |               |             |                  |          |
|--|-----------------------------------|---------------------------|--------------------------|---------------|-------------|------------------|----------|
| Study  | Design                            | Downgrade Criteria        |                          |               |             |                  | Quality  |
|  |                                   | Limitations               | Indirectness             | Inconsistency | Imprecision | Publication bias |          |
| Lin et al <sup>15</sup>  | Observational/<br>Cross Sectional | Serious <sup>a</sup>      | Not Serious              | Not Serious   | Not Serious | Unlikely         | Very Low |
| Lup et al <sup>16</sup>  | Cross Sectional                   | Very serious <sup>b</sup> | Not Serious <sup>c</sup> | Not Serious   | Not Serious | Unlikely         | Very Low |
| <p><sup>a</sup> The study states that Instagram is included in their term “social media,” but the study does not separate data on each social media platform to analyze their individual relationship to depressive symptoms</p> <p><sup>b</sup> Population was determined from the first author’s Facebook friends and may not encompass a representative population.</p> <p><sup>c</sup> The study does measure the direct relationship between depression and Instagram use but also uses the moderators of strangers followed and social comparison to evaluate the relationship between Instagram use and depression.</p> |                                   |                           |                          |               |             |                  |          |

**Table 2:** Demographic Characteristics of Lup et al Study Population

|                    |                             |               |
|--------------------|-----------------------------|---------------|
| Sex                | Male                        | 16%           |
|                    | Female                      | 84%           |
| Ethnicity          | White/European American     | 83%           |
|                    | Multiracial/ethnic or other | 7%            |
|                    | Latino/Hispanic             | 7%            |
|                    | Asian/Pacific Islander      | 3%            |
|                    | Black/African American      | 1%            |
| Education          | H.S. degree/GED             | 6%            |
|                    | Some college                | 20%           |
|                    | Trade/vocational training   | 3%            |
|                    | Bachelor's degree           | 49%           |
|                    | Master's degree             | 18%           |
|                    | Professional degree         | 5%            |
| Sexual Orientation | Heterosexual                | 88%           |
|                    | Bisexual                    | 5%            |
|                    | Gay/Lesbian                 | 3%            |
|                    | Questioning                 | 3%            |
|                    | Refused                     | 1%            |
| Mean Age           | 24.81 years                 | SD=2.51 years |