**Summary**I investigated why teenagers have trouble getting enough sleep compared to other age groups and what can be done to try to prevent sleep deprivation, and its effects. By dividing research into three themes - causes of sleep deprivation in teenagers, effects of sleep deprivation and how to reduce sleep deprivation - I was able to devise questions that I used as the basis of my research to help answer the research question.

I employed various research processes that included:

* Internet searches
* Literature sources: books, magazines, newspapers and journals
* Conducting interviews
* Conducting surveys
* Performing Experiments: Fitbit experiment and effects of sleep deprivation experiment
* Visiting the state library

My outcome was in the form of a written report. As I personally have difficulty sleeping at night, my findings will help me to improve my sleep, and may do the same for others who find it hard to get enough sleep.

Word Count: 149

**Evaluation of the Research Processes**

Internet sources were invaluable during the first stages of research. They were most helpful with understanding the basics of the topic, and any jargon specific to the science of sleep. Through the internet, easy access of medical studies was gained. Due to the credibility of the authors of these sources, the information was both reliable and with little bias. The internet was also the fastest way to conduct research, which helped make it very time efficient. Through the internet, all aspects of the question were able to be covered due to the extensive quantity of information available. One limitation of internet sources is that not all sources are valid, and so for each source the reliability had to be established by looking at the author’s credentials and how current the source was.

Literature sources were another effective primary source. The reliability of literature sources is easier to determine as they have already gone through an editing process. Books such as the “Sleep Disorders Sourcebook” also included reference lists, which improved the reliability and meant that any new information could be further researched. Book sources were especially useful in providing information on sleeping techniques. Newspaper articles also provided the names of previously unknown experts in the field, whose work could be followed. One limitation of literature sources is that some of the books have been outdated and so there may be more current information that is not discussed. Because of this, recent publications were used where possible. While newspapers tended to be more biased than books, this did not affect the information as it is not an opinionated topic.

Two experiments were used as research processes, one involving a Fitbit to record sleep and activity, and the other involving personal experimentation to test the effects of sleep deprivation. The results of the personal experiment helped validate findings from primary sources, and was insightful in finding out how sleep deprivation can affect the emotions and mentality of a sufferer of sleep deprivation. The personal experiment was limited as only one set of results was recorded, and no baseline was obtained. Therefore it is unsure whether the results would be similar if the experiment was repeated. The Fitbit experiment was also limited as only eleven people were tested, and the age differences and genders were not as varied as they could be. It is also hard to establish whether participants performed at their regular levels of fitness, and so this would affect the accuracy of results.

Conducting interviews allowed for personal questions to be answered by experts in the field, and clarifying responses meant that answers were unambiguous and could be discussed until there was no confusion. The interviewee, Catherine Sanders, was a reliable source of information as she has had clinical experience as a psychologist for the past 30 years, of which sleep is a part. There was slight bias in some responses about the practicality of starting school later, but this information was not used in the outcome, and so did not affect the final answer to the research question.

It is difficult to determine the reliability of the survey as it is hard to establish the honesty of each participant’s response. The survey helped confirm information from previous research that a major cause of sleep deprivation is use of technology, and also made it apparent how many teenagers are not getting the sleep they need. The survey was relevant as it was given to teenagers, which is what the research question is about. The survey is limited as the reliability of results is held in doubt.

Many of the research processes were effective in finding new information to help answer the research question. Most sources were reliable; however, certain sources contained limitations or bias. Primary sources were most useful in understanding basics of the topic, and secondary sources helped validate this initial research and allowed for personal questions to be answered.

**Responses to Challenges and Opportunities**

The Fitbit experiment presented many of challenges. Technical challenges that arose included the Fitbits not working at all, and Fitbits not recording sleep. Initially, to try to counteract these problems, more Fitbits were purchased, but the technical problems persisted. Due to this, the main purpose of the experiment, to find a correlation between activity and sleep quality, was unable to be determined. In response to this, the results that were able to be maintained were used to create an average length of sleep and also average bedtime of teenagers. As the desired purpose was not met, it was not possible to personally classify exercise as a sleeping technique, but literature sources were able to make this classification instead. It was also challenging to coordinate the distribution of the Fitbits to participants, but to combat this, a schedule was determined for each Fitbit, detailing when the participant would return them.

The effects of sleep deprivation experiment created many personal challenges. It was very difficult to stay awake and motivated throughout the nights of the experiment, and to fight against the body’s natural instinct. To try to counteract this, to help the accuracy of results, lots of bright light was used, the brain was kept stimulated by this light and technology, and the body was kept active during the night. This meant that the intended time without sleep was kept, making the results accurate.

One challenge presented by the interviews was only two people responded to a request for an interview, and only one of those respondents answered the interview questions. This was overcome by asking as many questions to the single interviewee as possible. The responses also provided new opportunities such as information from online sources that requires membership to access, and so would not have been available for this research project. Other sources such as specific books and articles were also suggested, which lead to the possibility for research to head in the direction of different studies. Another opportunity presented by the interview was the comment that starting school later in the day was not practical. Using this information, further research was conducted, and a judgement was made, agreeing with the comment. This meant that time could be used to follow the pathway of sleeping techniques that had practical applications.

It was also difficult to communicate with participants involved in the survey, interview and Fitbit experiment. Questions and instructions needed to be created so recipients understood what the desired outcome of their time was. To overcome this challenge, multiple question examples were made and outside help was required to confirm that others could understand what the questions and instructions were asking.

Another challenge was determining the reliability and bias of sources. Some sources may seem credible or unbiased, but then after a more in depth look at the source, this conclusion had to be changed. To help overcome this challenge, each source was checked multiple times for anything that could add to the credibility of the source, and for any possible examples of bias.

**Evaluation of Outcome and Research Findings**

The final evaluation was based on information gained from both primary and secondary sources. It is believed that the final outcome answered the research question at a satisfactory level. The outcome looked at what causes teenagers to be sleep deprived, the effects of sleep deprivation, techniques to improve sleep quality and teenage sleep compared with sleep quality of other age groups. More time could have been spent in comparing the sleep of teenagers and other age groups, but due to a controlled word count, this was not practical. There were areas of research that could have been discussed, such as the effect of starting school later on teenage sleeping patterns, but once again due to the restricted word count, these areas were unable to be sufficiently discussed. Another area of possible research included the differences in sleeping patterns of teenagers in other cultures. This area was not covered as it did not relate to the participants of the experiments or survey, who were all from a similar socio-economic background and culture.

Aside from assisting with personal sleep problems, the only other people that might benefit from the results of this research project, may be teenagers that are able to learn or improve sleeping techniques. It is unlikely to be of use or benefit to the general public. The information in the outcome included knowledge previously available to the public, however, this was unavoidable due to previous inexperience in the field of the science of sleep. Research in this field has shown how important sleep is in life, and why teenagers should try to get the best sleep possible.

In summary, the research processes were chosen as they were believed to be valid, effective and reliable. Many processes had limitations or challenges but they also presented new opportunities. Aside from personal benefit, the findings are unlikely to be of use to the public at large. It is also believed that although other areas could have been researched to help answer the question, the research question was answered as well as possible.

Word Count: 1495