**The Space Shuttle Challenger disaster:**

**A classic example of Groupthink**

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**Abstract**

There are many times in history when decisions are made that impact societies greatly. Decisions are made by those in leadership roles either alone or in a collective group. With every decision made there are ethical strings attached. This research focuses theoretical application Groupthink by Janis as it pertains to the case study of the 1986 Space Shuttle disaster. The research will show many examples of decisions made and the symptoms of Groupthink of which they exhibited. It furthers concludes if these symptoms appear and can be recognized better decision making can be made.

*Keywords:* Decision-making, groupthink, Space Shuttle disaster

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In everyday life, we as humans, make decisions on virtually everything. Sometimes these decisions have consequences that affect us as well as others. Humans utilize different criteria to come to such decisions. This could even be taken a step further when looking at decisions made by organizations. When specifically speaking about decision-making, there has never been one, clear, accepted way on how we make decisions. Theorists, philosophers, psychologists and sociologists have researched this concept for decades. To understand decision making, as it pertains to a group, further questions should be explored. Would it be easier for one person or many people to make a decision? If many people make a decision collectively what criteria do they use to make such a decision?

One specific theory that explains how people make decisions collectively is coined groupthink. Theorist Irving Janis was said to have “introduced the concept of groupthink through the popular press in 1971” (Griffin, n.d.). Over the next several pages, the concept of groupthink will be defined and discussed based upon Janis’ findings. A background will then be examined on what has been used as the perfect groupthink example: the Space Shuttle Challenger disaster of 1986. Finally, an application of the groupthink concepts will be shown using the Space Shuttle disaster example.

By applying groupthink concepts to such an incident, this research seeks to show the ultimate result of using such a process. Perhaps if used in a different manner, groupthink could be effective. As stated in Griffin (n.d.), “there are also many routine occasions when a groupthink mode is actually helpful because it makes for a speedy and amicable consensus on issues of minor importance.” On the other side of the concept Janis (1977) states, “that the concurrence-seeking tendency of close-knit groups can cause them to make inferior decisions” (Griffin, n.d.). In the case of the Space Shuttle Challenger disaster, Janis may agree that an inferior solution yielded the loss of human lives.

**Groupthink Signs and Symptoms**

As stated earlier, sometimes decisions are made individually and other times collectively. When Irving Janis coined groupthink, he defined it as “a mode of thinking that people engage in when they are deeply involved in a cohesive group, when the members’ strivings for unanimity override their motivation to realistically appraise alternative courses of action” (Griffin, n.d.). According to Janis then, a group using this theory needs to be very closely knit either in a team, group or organization. Through this close-knit atmosphere, everyone in the group ultimately seeks to maintain harmony within the group thus not “rocking the boat.” Margaret Thatcher, the former prime minister of England, once stated, “Consensus is the death of leadership.” This seems to fall in line very well with Janis’ theory behind groupthink. Hughes, Ginnett and Curphy (2005) pointed out “unwise decisions may result when concurrence seeking among members overrides their willingness to express or tolerate deviant points of view and think critically.” By not agreeing with the group, or having an opposing viewpoint, a person may be viewed as disloyal. Janis took this a step further for leaders, in that, he indentified eight symptoms that groupthink exhibits. By identifying the symptoms, those leaders can begin to make better decisions and, in turn, create better solutions.

According to Janis (1977) the eight symptoms were identified and defined as:

1. Illusion of invulnerability- Members ignore obvious danger, take extreme risk, and are overly optimistic
2. Illusion of morality- Members believe their decisions are morally correct, ignoring the ethical consequences of their decisions
3. Collective rationalization- Members discredit and explain away warnings contrary to group thinking
4. Excessive stereotyping- The group constructs negative stereotypes of rivals outside the group
5. Self-censorship- Members withhold their dissenting views and counter arguments
6. Illusion of unanimity- Members perceive falsely that everyone agrees with the group’s decision; silence is seen as consent
7. Pressure for conformity- Members pressure anyone in the group who express arguments against the groups’ stereotypes, illusions, or commitments, viewing such opposition as disloyalty
8. Mindguards- Some members appoint themselves to the role of protecting the group from adverse information that might threaten group complacency

It is important to remember, Janis suggests that not all these symptoms need to be present for groupthink to occur. He does note, however, that there are some contributing factors, which include cohesiveness, structural faults within the organization and situational context, which exist for groupthink to occur (Janis, 1982). Janis does state that the first two symptoms “stem from overconfidence in the group’s prowess” (Griffin, n.d.). Symptoms three and four deal specifically with what Janis noted as “the tunnel vision members use to view the problem” (Griffin, n.d.). Symptoms five through eight, Janis coined as “strong conformity to group pressure” (Griffin, n.d.). When specifically focusing on the Challenger disaster, it is important to remember that it was not simply one organization within the group, but rather three. As will be discussed later, there were three organizations involved in the groupthink: NASA, Thiokol Engineering and the United States government. To gain a solid understanding of the group think issues, as they apply to the Challenger Disaster, some background needs to be introduced. Then, through various examples of this incident, it will be shown that the Challenger Disaster was very much a groupthink incident.

**Space Shuttle Disaster Groupthink Decisions**

At 11:38am Eastern Standard Time on January 28, 1986 the flight of the Space Shuttle Challenger (Mission 51-L) began. It ended 73 seconds later, secondary to the burning of hydrogen and oxygen propellants that destroyed the external tank and caused a complete breakup of the shuttle. “All seven crew members perished” (Saussois, 1991). While the physical cause of the Challenger tragedy is now known as the failure of the O-rings (rubber seals in the solid rocket booster), the Report of the Presidential Commission on the Space Shuttle Challenger Accident (1986) revealed that the primary contributing cause of the disaster was “flaws in the decision-making process” (Saussois, 1991). Further, ethical issues persisted during the decision-making process, not simply miscommunication between the groups.

The three decision-making groups involved in the incident included: the United States government, Morton Thiokol engineers, who served as the contractors that designed and built the rocket boosters, and NASA managers. The NASA shuttle program structure included four levels of management. Level 1 is the Associate Administrator for Space Flight, who oversees policy, budgets, and technical matters. Level 2 is the Manager of the National Space Transportation program and “provides technical oversight on behalf of Level I” (Saussois, 1991). Level 3 includes the program managers for the main components of the shuttle. This group will deal directly with Morton Thiokol and is responsible for “development, testing, and delivery of hardware to the launch site” (Saussois, 1991). Level 4 are the contractors responsible for both the design and production of the shuttle’s hardware components. In addition to NASA’s management structure, a flight readiness review is also undertaken “to certify the fitness of all components of the space shuttle assembly” (Saussois, 1991). All levels of the management structure must certify, in writing, the flight readiness of the elements for which they are responsible (Saussois, 1991). This review process begins at Level 4 and concludes with the Level 1 review, which occurs approximately two weeks prior to launch. Additionally, “each space shuttle program element endorses the fact that it has satisfactorily completed the manufacture, assembly, test, and check out of the pertinent elements” (Saussois, 1991). It is important to note that any malfunctions or problems that occurred with previous flights are also considered as part of the flight readiness review.

Another standard practice necessary prior to all flights includes a critical item list, which classifies the multiple parts of the shuttle elements. In regards to the Challenger tragedy, the focus leads to items listed as criticality 1 and criticality 1R. “Criticality 1 covers any subsystem that contains hardware, the failure of which cold cause loss of life or vehicle. Criticality 1R covers any subsystem that contains redundant hardware, total element failure of which could cause loss of life or vehicle” (Saussois, 1991). Important to note is that approximately 200 elements are classified as criticality 1 on the solid rocket booster. All management levels are expected to be notified of criticality 1 items. Further, criticality 1 items are understood to restrict a launch. Moreover, the launch cannot take place before the item is reviewed to demonstrate that no problem will occur during the launch as well as the flight (Saussois, 1991).

So how does all this information relate to Janis’ concept of groupthink? Well, administrators under time pressure ignored engineers concerns about failure of the O-rings months before take-off in part due to recent bad press and the need to make NASA’s efforts appear timely (Janis, 1982). The engineers at Morton Thiokol noticed the problem and communicated their concerns to top management. NASA was also aware of the problem. Again, it had more to do with poor decision-making under uncertainty and response to stakeholders than with miscommunication.

Again, the first two symptoms of groupthink defined by Janis stem from overconfidence. Specifically George Hardy, NASA manager, illustrates illusion of invulnerability. When the engineers raised the risk of O-ring failure, George Hardy responded that the risk was “true of every other flight we have had” (Griffin, n.d.). While there had been damage to the O-rings in previous launches, there was never any consequence to the damage and the American space program had never experienced an in-flight fatality. These previous successes led to overconfidence. Also, in accord with the second symptom (Illusion of morality), managers attempted to prove that the launch was unsafe instead of the other way around, thus shifting the moral rules under which they operated (Griffin, n.d.). Mangers were looking for proof that the flight would fail, rather than succeed, because of overconfidence from prior launches with no malfunctions. As a result, the concentration focused on failed flights rather than all flights. Symptoms three and four reflect tunnel vision. Again, NASA manager, George Hardy surfaces with his comment “we were counting on the secondary O-ring to be the sealing O-ring under the worst case conditions” (Griffin, n.d.). This emphasizes symptom three, collective rationalization, even though O-rings were listed, as criticality 1 on the critical items list, there was a misconception that the secondary O-rings would seal averting any problems. These statements were meant to discredit the warnings issued by the engineers. Symptom four, stereotyping, is identified in that the NASA managers looked down on the Thiokol engineers. Snide comments were made to the engineers when they recommended postponing the launch due to temperature concerns. It was also noted that NASA managers saw the engineers as perfectionists and not risk-takers. The last four symptoms are signs of conformity under pressure within the group. There are multiple examples of these symptoms. Self-censorship is evidence by George Hardy, as it later became known that he wanted to postpone the flight but withheld his viewpoint and did not clearly state his position. With the illusion of unanimity, members falsely perceive that everyone agrees with the group’s decision and silence is mistaken as consent. NASA managers eventually admitted that they did not report the concerns of the Thiokol engineers to their supervisors. As such, the flight readiness review team interpreted the silence of the managers as agreement. There were several instances of direct pressure for conformity. Morton Thiokol engineers were under the most pressure to reverse their recommendation to postpone the launch. Morton Thiokol wanted to be on good terms with NASA, secondary to upcoming contracts, and was fearful of losing future contracts. NASA managers had postponed the launch three times already and did not want to be regarded by the American public as incompetent. NASA managers were also under pressure from the White House and were worried about losing funding. Sadly, the astronauts were not part of the decision-making process and loss of life was not considered. Mindguards occur when some members protect the group from information that may threaten group complacency. For example, Roger Boisjoly was Thiokol’s expert on O-rings, but he admitted that he “was not even asked to participate in giving input to the final decision charts” (Griffin, n.d.).

**Conclusion**

In conclusion, the Space Shuttle Challenger disaster is a classic example of groupthink and exhibits all eight symptoms that Janis identifies. Again, groupthink requires that members share a feeling of solidarity and are highly concerned with maintaining the relationship within the group at all costs. As a result, the tendency to preserve the harmony of the group leads to inferior decision-making.

The day before the launch of Space Shuttle Challenger, Morton Thiokol engineers recommended delaying the launch. Although there was no mention of O-ring failure, the engineers noted the risk in launching the shuttle in below-freezing temperatures. Conversely, the NASA managers wanted to continue with the plans to launch and discounted the trepidation offered by Thiokol engineers. The NASA managers urged the engineers to change their recommendation and eventually Thiokol engineers reversed their position. And so, even though the O-rings were classified as a critical component on the rocket booster, Thiokol announced that the shuttle was “ready to fly” (Griffin, n.d). The ultimate result was that the O-rings did fail and subsequently life was lost.

**References**

Griffin, E. (n.d.). Groupthink of Irving Janis. In *A First Look at Communication Theory*

(Chapter 18). Retrieved October 7, 2009, from

<http://www.afirstlook.com/archive/groupthink.cfm?source=archther>

Hughes, R. L., Curphy, G. J., & Ginnett, R. C. (2005). *Leadership : Enhancing the Lessons of Experience* (5th ed.) New York: McGraw-Hill School Education Group

Janis, I. (1982). *Groupthink: Psychological studies of policy decisions and fiascos.*

Boston MA: Houghton Mifflin.

Janis, I., & Mann, L. (1977). *Decision-making: A psychological analysis of conflict, choice, and commitment.* New York, NY: Free Press.

Maier, M. (1993). Teaching from Tragedy: An Interdisciplinary Module on the Space Shuttle Challenger. *T H E Journal*, *21*(2), 91-94. Retrieved September 24, 2009, from Academic Search Premier.

Saussois, J. M., & Laroche, H. (1991). The politics of labeling organizational problems: An analysis of the Challenger Case. *Knowledge & Policy*, *4*(1/2), 89-107.

United States, Presidential Commission on the Space Shuttle Challenger Accident. (n.d.). *Report of the Presidential Commission on the Space Shuttle Challenger Accident.* Retrieved August 26, 2009, from <http://history.nasa.gov/rogersrep/genindex.htm>