ORGANIZATIONAL DESIGN AND ETHICS: THE EFFECTS OF RIGID HIERARCHY ON MORAL REASONING

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ABSTRACT

This study investigates the relationship between organizational design and ethics. It argues that an organization designed in a rigidly hierarchical structure restricts the moral development of its members and ultimately adversely affects their ethical behavior. Prior research suggests members of organizations structured in a rigid hierarchy exhibit less autonomous behavior when compared to less rigid organizations. As autonomous behavior is also a *sine qua non* for higher levels of moral development, then the study hypothesizes a negative relationship between rigid hierarchy and moral development. To empirically test this hypothesis, the study compared the moral development of individuals from a rigid hierarchy with individuals from society-at-large and from less-rigid organizations. The study used Kohlberg's six-stage moral development framework to operationalize different levels of moral judgment, and employed Rest's Defining Issues Test (DIT) as a measurement instrument. The DIT was administered to a cross-section of 480 members of the U.S.
military. The military organization was selected because it is a stereotypical rigid hierarchy, with a tall pyramid structure, numerous levels, and an emphasis on obedience and heteronomous behavior. The study found the DIT scores of the military members to average about seven points lower on the DIT than a large adult meta-sample from society-at-large. The difference was statistically significant.

The study found the DIT scores of military members assigned to ships to be significantly lower than scores of those assigned to shore units. Because of the very rigid routine aboard ships, sailors are allowed less opportunity to act autonomously. All of the findings support the hypothesis that rigid hierarchy restricts moral development.

INTRODUCTION

Contemporary organizational theory argues that the way an organization is structured can affect the overall behavior of individual members of the organization. Research suggests that members of organizations structured in a rigid hierarchy exhibit low morale, decreased innovation, and low output when compared to organizations structured less rigidly. Argyris\(^1\) argues that a rigidly hierarchical organization causes an individual to alter behavior from active toward passive, from equal towards subordinate, from self control toward dependency, and from having a long-term perspective to having a narrow and short-term focus. Scholars suggest that hierarchy causes: domination of individuals,\(^2\) timidity, conservatism, and technicism,\(^3\) goal conflict,\(^4\) conformity,\(^5\) low output and low morale,\(^6\) and decreased innovation.\(^7\) While the research is clear on the impact of organizational design on overall behavior and productivity, it is less clear on the effect that organizational design may have on ethical behavior.

The purpose of this study is to determine if there is a relationship between organizational design and ethics. Examining the relationship
between organizational design and ethics is not easy. While different types of organization are well-defined, well-researched and allow empirical examination, our ability to describe ethical behavior is much less exact. How can ethical behavior be operationalized? One method is through the use of Kohlberg’s moral development theory that argues people pass sequentially through a series of moral development stages. Moral development theory does not judge the morality of an individual, but instead focuses on how an individual decides what’s right or wrong. By evaluating the moral development process of an individual and determining what moral development stage predominates, ethical behavior can be described and operationalized.

To investigate the relationship between organizational design and ethical behavior, this study reviews the literature of hierarchy and moral development and identifies theoretical linkages suggesting a correlation. Next, the study empirically tests the relationship between hierarchy and moral reasoning. Using an instrument based on Kohlbergian theory, the level of moral reasoning of a sample of individuals from a rigidly hierarchical organization is compared with individuals from less-rigid organizations to determine if hierarchy significantly affects moral reasoning.

A REVIEW OF HIERARCHY THEORY

Any serious discussion of hierarchy theory begins with Max Weber. Weber provides the clearest definitions of bureaucracy, leadership, administration, hierarchy, and their relationships. His “ideal” bureaucracy is described as a rational organization operating under rules by which tasks are organized; a division of labor which creates specialization; hierarchy, meaning superior-subordinate relationships; decisions by technical and legal standards; administration based on informational systems and institutional memory; and administration as a vocation.⁸
The essence of hierarchy is the distinction between the role of superior and subordinate. The person in the superior role is expected to exercise authority over the subordinate, while the subordinate is expected to accept the authority of the superior.\(^9\) As the subordinate becomes the superior of another subordinate, and so on, a hierarchical chain of command, or line of authority, is formed. Early twentieth century administrative theorists who reinforce the classical Weberian definition of hierarchy include Michels,\(^{10}\) Fayol,\(^{11}\) Wilson,\(^{12}\) Gulick,\(^{13}\) Urwick,\(^{14}\) and Mooney.\(^{15}\) A modern supporter is Jaques, who is convinced that traditional managerial hierarchy is the most efficient, hardest, and most natural structure for large organizations.\(^{16}\) Jaques, like Appleby\(^{17}\) before, argues that properly structured hierarchy can make a prime contribution to pluralism and society, release energy and creativity, rationalize productivity, and actually improve morale.

Downs\(^{18}\) describes the modern hierarchical organization as having: a hierarchical structure of formal authority; vertical formal communications; extensive systems of formal rules; informal structure of authority; informal and personal communications networks; formal impersonality of operations; and intensive personal loyalty and personal involvement among top officials. Downs' law of hierarchy stipulates that coordination of large-scale activities requires a hierarchical structure. He argues that hierarchy is inevitable, essential to the maintenance of order, and moves toward organizational rigidity. Normally, the hierarchical structure begins growing from the top downward. As a group is given authority to perform a set of tasks, it is not unusual for the tasks to become too large for this group to perform alone. Task overloading at the top causes the organization to add subordinates and to subdivide tasks at the top into those performed at lower levels. A more complicated hierarchy is created. Large government and military organizations, with no economic incentive to encourage efficiency, have highly centralized hierarchies and exceedingly complex rules, even when compared to large private-sector organizations.\(^{19}\)
In recent years the concept of hierarchy has come under increasing scholarly criticism. Again, the theory begins with Weber,\(^{(20)}\) whose description of the “ideal” bureaucracy also warns of pathological aspects. He sees the hierarchy as a source of domination of the individual, a reduction in the capacity of organizations to respond to change, and a destruction of individual personality through dehumanizing regimentation. Merton\(^{(21)}\) suggests hierarchical design inevitably leads to organizational dysfunctions and unanticipated outcomes. He emphasizes the impact of rigid hierarchy on the individual, suggesting that over-concern for organizational structure and regulation leads to timidity, conservatism, and technicism. To Selznick,\(^{(22)}\) the dysfunctional consequences of delegation and specialization cause goal conflict and tensions detrimental to the organization. On one hand the need for control and coordination creates a strain toward greater goal consensus and a taller hierarchy. On the other, the need for variety and innovation creates a strain toward greater goal diversity and a flatter hierarchy.\(^{(23)}\)

Scholars contend that rigid hierarchy stifles professional judgments,\(^{(24)}\) limits innovation,\(^{(25)}\) and creates dependency and subordination, which in turn lead to higher absenteeism.\(^{(26)}\) Worthy’s\(^{(27)}\) research at Sears Roebuck suggests that rigid hierarchy is a cause of poor management-employee relationships. He finds that where jobs are broken down too finely there is more likely to be low output and low morale. Recent research also suggests an effect of hierarchy upon production. Aoki\(^{(28)}\) compares the classical hierarchical American organization with the more horizontally designed Japanese organization and concludes the hierarchical organization increases productivity in situations that are very stable or very uncertain, while the horizontal organization increases productivity in intermediate situations.

Parry\(^{(29)}\) criticizes hierarchy in his analysis of the US Navy. He sees naval units as rigidly hierarchical, with work units organized through functional departments and divisions. This rigidity causes a
problem, however, as work frequently crosses departmental and
divisional boundaries. Rank is emphasized over roles, and
communication flows only along rigid paths. Orders are exclusively
top down. With commands flowing down, and narrowly defined
information flowing up, feedback is blocked. To Parry, rigid
hierarchy restricts knowledge by forcing information into predefined
cubbyholes, confining information to official channels and
delegitimizing informal communication and organization.

Jaques\textsuperscript{30} faults modern organizations for equating pay grades
with hierarchical work levels and for having too many layers. With
too many layers, accountability is unclear, and without accountability
the organization is less productive. Too many layers causes a number
of problems, including: frequent by-passing of levels because of
excessively long lines of command; uncertainty as to who a person’s
superiors and subordinates are; and a feeling of subordinates having
managers “breathing down their necks” from many levels.
Consideration of these problems raises the question of just how many
levels there ought to be in a bureaucratic hierarchy.

Argyris\textsuperscript{31} links hierarchy with alienation, anomie, and conflict
and sees a tension between the demands of hierarchy and an
individual’s psychological self esteem. He believes that a rigid
hierarchy prevents an individual from reaching full potential and
stifles autonomy and self-direction. Hummel\textsuperscript{32} agrees, writing that
employees surrender control of their actions and hierarchical division
of labor weakens the possibility of anyone acting successfully.
Argyris sees an irony that modern organizations may solve the
physiological needs of man but fail to provide the psychological
needs. Kornhauser\textsuperscript{33} suggests that mental health shows a consistent
correlation with levels of hierarchy. The higher the occupational
level, the better the mental health of the individual. Empirical studies
suggest a relationship between the mental health of workers and
absenteeism, goldbricking, slowdowns, rate setting, accidents,
stealing, cheating, and reduced work quality. Pathological
consequences increase as one goes down the chain of command, as
directive leadership increases, as management controls are increased, and as human relations programs are undertaken but improperly implemented.\(^{34}\)

**A THEORETICAL LINKAGE: HIERARCHY AND ETHICS**

One scholar who integrates theories of ethics and the hierarchical organization is Thompson,\(^{35}\) who sees a negative relationship between hierarchy and the moral aspects of democratic responsiveness. Thompson accuses hierarchy of placing “most public officials most of the time beyond the province of moral responsibility.” As long as bureaucrats follow the orders of their superiors and organizational procedures, they are not responsible for any harmful consequences of their actions and can hide behind the anonymity created by tall hierarchies. Schwartz\(^{36}\) and Maclagan\(^{37}\) agree, noting that rigid hierarchy and authority may serve to prevent individual responsibility for the moral consequences of action.

Ladd\(^{38}\) also sees hierarchy having a negative impact on moral responsibility by causing a dilemma between either choosing to sacrifice the goals of the organization or choosing to sacrifice proper ethical standards. By creating such a dichotomy, Ladd suggests that organizational goals often may be of questionable moral value and can only be monitored by a process incorporating more principled individual standards.

Another theoretical linkage between hierarchy and moral responsibility can be argued that, if hierarchy restricts overall human development and if moral development is an integral subset of overall human development, then hierarchy also restricts moral development. Again, it is Weber who suggests that such logic may exist, writing that hierarchical organizations “shatter and fragment” human experience to the extent that any shared sense of reason, meaning, and morality is lost.\(^{39}\) Argyris\(^{40}\) contributes to this logic. He sees a basic conflict between the demands of organization and the structure of the mature, normal personality. Argyris’ argument that rigid hierarchy
leads to psychological failure suggests that a moral, ethical component exists. Psychological failure is assumed to lead to a dysfunction in overall cognitive development, including cognitive moral development. Empirical studies support a correlation between moral development and measures of general cognitive development (IQ, etc.). Therefore, if general cognitive development is restricted by hierarchy, as Argyris suggests, then moral development should also be restricted, and a restriction in moral development, in turn, will adversely affect ethical behavior.

Another linkage between theories of hierarchy and moral development is autonomy. Argyris argues rigid hierarchy restricts an individual’s ability for autonomy and self-direction. Meanwhile, both Kohlberg and Piaget see autonomy as a sine qua non for advanced levels of moral development and ethical behavior. If Argyris is correct and hierarchy restricts autonomy, then hierarchy would also restrict a person’s ability to reach Kohlberg’s higher levels of moral reasoning.

The linkage between hierarchy and moral development is reinforced by studies suggesting hierarchical organizations have a negative effect upon small group conformity behavior, obedience to authority, and groupthink. In Milgram’s study, a person in authority orders people to punish a protesting victim with increasing intensities of electric shock, though in reality no shock was given. Although Milgram expected most participants would refuse to shock the victim, he found 65% of the participants obeyed the experimenter and administered the highest level of shock. Milgram theorized that people often become agents of authorities and pass the responsibility for their actions to the authority. To him, individuals in hierarchies become passive players and enter a heteronomous state in which autonomy, responsibility, and moral judgment are suspended.

Zimbardo supports the negative relationship between rigid hierarchy and moral development. His experiment of a mock prison at Stanford University created an intense environment promoting
anonymity and depersonalization of student volunteers. Zimbardo observed aggressive, sadistic behavior of student "guards" and submissive behavior of student "prisoners." He concludes that human evil is situation dependent, and pathological behavior such as sadism or extreme passivity can be created with ease within certain organizational settings. To Zimbardo, "conditions which foster deindividuation make each of us a potential assassin." The situations likely to result in such behavior are: presence of an authority responsible for consequences, remoteness of victims or clients, subordinate roles, and binding rules of protocol.

Unfortunately, the type of structurally designed pathological behavior observed by Milgram and Zimbardo does not occur only in the laboratory. History provides actual events of genocide and slaughter that are attributed to blind obedience to authority and heteronomous behavior at its worst. The Nazi holocaust, of course, is the most extreme and hideous example. The massacre of over 400 Vietnamese civilians by American soldiers at My Lai possesses the same situational characteristics that Zimbardo says are likely to result in inhumane behavior, and the soldiers reflect Milgram’s description of those who enter a heteronomous and hierarchical state in which autonomy, responsibility, and moral judgment are suspended.

**A REVIEW OF MORAL DEVELOPMENT THEORY**

A result of increased interest in ethics has been an effort to develop empirical methods to define, and evaluate ethical behavior. One body of theory that provides an opportunity for empirical ethics research is moral development theory. Foremost of the modern moral development theorists is Kohlberg. He defines moral judgment according to how a person reasons (structure), rather than what the person thinks (content). Kohlberg maintains that all people in all cultures pass sequentially, invariably, and irreversibly from lower to higher stages of moral reasoning. Table 1 illustrates Kohlberg’s typology of three levels and six stages of moral development.
### TABLE 1

**Kohlberg’s Levels and Stages of Moral Development**

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>STAGE</th>
<th>SELF-PERCEPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preconventional</td>
<td>1. Punishment orientation</td>
<td>Outside the group</td>
</tr>
<tr>
<td></td>
<td>2. Self (and sometimes others’) satisfaction</td>
<td></td>
</tr>
<tr>
<td>Conventional</td>
<td>3. Win others’ approval by helping them.</td>
<td>Inside the group</td>
</tr>
<tr>
<td></td>
<td>4. Law-and-order mentality</td>
<td></td>
</tr>
<tr>
<td>Postconventional</td>
<td>5. Respect rights and values</td>
<td>Above the group</td>
</tr>
<tr>
<td></td>
<td>6. Act in accord with universal principles</td>
<td></td>
</tr>
</tbody>
</table>

### THE DEFINING ISSUES TEST

A major development in Kohlberg’s theory occurred in 1971 with the design of Rest’s Defining Issues Test (DIT). The DIT is a multiple-choice, objective instrument that enables researchers to use a standardized assessment of moral judgment. The DIT presents a subject with six moral dilemmas, each followed by a list of questions that a person must rank order in choosing what ought to be done in the situation. Each question relates to a particular stage on Kohlberg’s scale. By computing the percentage of Kohlberg Stage 5 and 6 items selected, a continuous number, the $P$ index, is derived.

The DIT is widely used and well documented in terms of reliability. Since its first design, the DIT has been administered in hundreds of studies to thousands of subjects. The test has been used for a variety of cross-sectional, longitudinal, cross-cultural, intervention, and correlational studies. Cross-sectional and
longitudinal studies are crucial to the basic validity of moral development theory, as they provide empirical evidence that people advance over time from less to more advanced forms of thinking. In a meta-review of 12,000 subjects, Rest\textsuperscript{(56)} finds the most important determinants of moral development to be education and age.

Correlational studies establish a relationship between the way people think about moral dilemmas and they actually act. Blasi's\textsuperscript{(57)} meta-review shows that 57 of 75 studies report a significant correlation between DIT scores and behavior, and Thoma's\textsuperscript{(58)} meta-review of 30 studies produces similar results. Research has found DIT scores to correlate with a variety of behaviors, including juvenile delinquency,\textsuperscript{(59)} drug and alcohol abuse,\textsuperscript{(60)} spouse abuse,\textsuperscript{(61)} conscientious objection,\textsuperscript{(62)} and opinions on abortion.\textsuperscript{(63)}

As the DIT has been administered to thousands of subjects, it is now possible to compare the $P$-scores among a wide variety of demographic profiles. Table 2 presents the average DIT scores of several distinct groups.

\textbf{METHOD}

A review of the theories of hierarchy and moral development suggests that a relationship exists between organizational structure and ethical behavior. To examine this relationship empirically, the study employed a quasi-experimental, applied research design that compared the moral development of individuals from a rigid hierarchical organization with individuals from less-rigid society-at-large. The purpose of this comparison was to test the hypothesis that a rigid hierarchy restricts the moral development of organization members.

The research called for the DIT to be administered to a cross-section of a tall, rigid hierarchy. The organization chosen was the US Coast Guard, one of the nation's five armed services. The Coast Guard is comprised of 33,975 military personnel, including 26,953
### TABLE 2

**Average P Score for Selected Groups**

<table>
<thead>
<tr>
<th>Group</th>
<th>Avg P Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moral philosophers and theologians</td>
<td>65.2</td>
</tr>
<tr>
<td>Seminarians in Protestant seminary</td>
<td>59.8</td>
</tr>
<tr>
<td>Advanced law students</td>
<td>52.2</td>
</tr>
<tr>
<td>Practicing medical doctors</td>
<td>49.5</td>
</tr>
<tr>
<td>Staff nurses</td>
<td>46.4</td>
</tr>
<tr>
<td>Graduate business students</td>
<td>42.8</td>
</tr>
<tr>
<td>Average college student</td>
<td>42.3</td>
</tr>
<tr>
<td>Average adults in general</td>
<td>40.0</td>
</tr>
<tr>
<td>Average senior high student</td>
<td>31.8</td>
</tr>
<tr>
<td>Adults with senior high education</td>
<td>28.2</td>
</tr>
<tr>
<td>Prison inmates</td>
<td>23.5</td>
</tr>
<tr>
<td>Average junior high student</td>
<td>21.9</td>
</tr>
<tr>
<td>Delinquent 16-year old boys</td>
<td>18.9</td>
</tr>
</tbody>
</table>

(79%) enlisted members, 5,559 (17%) commissioned officers and 1,463 (4%) warrant officers. Women comprise approximately 9.7% of both officer and enlisted ranks. Minorities make up 19% of enlisted ranks and 10.4% of officers. The rank structure of the Coast Guard is identical to the hierarchical design of the other military services. Twenty two separate ranks form the Coast Guard hierarchy: nine enlisted, ten commissioned officer, and three warrant officer ranks. As a military organization, the Coast Guard fits the description of a tall, rigid hierarchy. Both in rank structure and operational chain of command the Coast Guard has more levels than a typical corporate organization. As a military service, the underlying justifications for hierarchy include an emphasis on coordination through vertical communications and a need for redundancy in the military structure to control the effects of operational requirements.
In order to measure the moral judgment of various levels of the Coast Guard rank hierarchy, the DIT was administered to a cross-section of Coast Guard officer, warrant, and enlisted personnel. Of the thirty units requested to participate, six declined on the grounds that the testing would interfere with unit operations. Of the 24 units participating, 13 were large shore units, such as marine safety offices, group commands, and air stations, and the remaining 11 were large ships of 270 feet or greater in length. Each of the 24 units selected twenty individuals comprising a cross section of the unit’s rank structure. Therefore, a total of 480 individuals (24 units X 20 personnel each) comprised the sample.

To test the hypothesis that a rigid hierarchy restricts the moral development of its members, Coast Guard DIT scores were compared with the scores of previously tested individuals from society-at-large. Administered to a large number of subjects over the last twenty years, the DIT provides a unique opportunity for comparative studies. Researchers have used the DIT in more than 500 separate studies and a large data base has been compiled that approaches a random sample (n > 12,000).

Another important analysis was a comparison of DIT scores of Coast Guard personnel assigned to vessels and those assigned to shore units. There are few examples of organizations with a more rigid hierarchy than a military vessel. The highly structured command-and-control design of a military vessel is indeed the stereotypical rigid hierarchy. Commands and decisions originate from the apex of the pyramid. The times of meals, drills, musters, taps, reveille, coffee breaks and almost all other daily shipboard events are routinized. A formal system of official regulations, the Uniformed Code of Military Justice, standing orders, and standard operating procedures cover almost every possible shipboard decision. While such a legalistic organization leaves little room for error, it also allows little room for individual initiative, discretion, or autonomous behavior for its crew. On ships, the influence of the rigid hierarchy
is ever-present, with the shipboard routine continuing 24 hours a day. While shore side members can exhibit autonomous, individualistic behavior during their off hours at home, seagoing members have no such luxury. Because of these striking differences, the hypothesis is that personnel serving ashore, where the hierarchy is less rigid, exhibit a greater degree of moral autonomy than those at sea, and will in turn exhibit a higher degree of moral development.

RESULTS

On May 1, 1997 the first unit returned its DIT questionnaires, and the last of the 24 units responded on August 13, 1997. Of the 480 questionnaires submitted, 401 (84%) were returned. Of those, 84 tests were discarded for being incomplete or failing to pass a reliability check. Consequently, the 480 tests mailed yielded a usable sample of 317 tests, or 66%. A chi square test revealed no significant difference in the response of shore units and ships. The sample of 317 cases consists of 211 (66.6%) enlisted, 14 (4.4%) warrant, and 88 (27.8%) officer personnel.

An important test of this research was to confirm that moral reasoning increases as the levels of a hierarchy are increased. A positive correlation between rank and $P$ score provides a validation of the relationship between Kohlberg's theory and Rest's instrument. If rank -- a function of education, seniority, and age -- is not related to moral development, then the confidence in both Kohlberg's theory and the DIT would be eroded. Further analysis, especially the test of the main hypothesis that a rigid, military hierarchy restricts moral development, would be more problematic and based on unsound theoretical footing if rank and $P$ score were found to be unrelated.

Table 3 displays the mean $P$ scores for each of the 17 Coast Guard ranks. As illustrated by Figure 1, the mean $P$ scores of different ranks increase at a consistent, near-linear rate as rank is increased. The highest officer rank surveyed (Captain/O-6) has the highest officer mean $P$ score (39.9) while the lowest enlisted rank
### TABLE 3

**Mean P Score by Coast Guard Rank**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Mean P Score</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seaman Apprentice (E-2)</td>
<td>28.2</td>
<td>11.92</td>
<td>11</td>
</tr>
<tr>
<td>Seaman (E-3)</td>
<td>28.3</td>
<td>12.10</td>
<td>33</td>
</tr>
<tr>
<td>PO Third Class (E-4)</td>
<td>32.2</td>
<td>13.67</td>
<td>49</td>
</tr>
<tr>
<td>PO Second Class (E-5)</td>
<td>31.1</td>
<td>10.61</td>
<td>41</td>
</tr>
<tr>
<td>PO First Class (E-6)</td>
<td>30.1</td>
<td>13.93</td>
<td>38</td>
</tr>
<tr>
<td>Chief Petty Officer (E-7)</td>
<td>33.9</td>
<td>9.26</td>
<td>30</td>
</tr>
<tr>
<td>Sr Chief Petty Officer (E-8)</td>
<td>33.3</td>
<td>8.60</td>
<td>8</td>
</tr>
<tr>
<td>Mstr Chf Petty Officer (E-9)</td>
<td>38.3</td>
<td>----</td>
<td>1</td>
</tr>
<tr>
<td>Warrant Officer (W-2)</td>
<td>37.4</td>
<td>10.62</td>
<td>7</td>
</tr>
<tr>
<td>Warrant Officer (W-3)</td>
<td>36.7</td>
<td>3.30</td>
<td>3</td>
</tr>
<tr>
<td>Warrant Officer (W-4)</td>
<td>45.4</td>
<td>10.04</td>
<td>4</td>
</tr>
<tr>
<td>Ensign (O-1)</td>
<td>35.8</td>
<td>10.61</td>
<td>14</td>
</tr>
<tr>
<td>Lieutenant JG (O-2)</td>
<td>38.2</td>
<td>13.07</td>
<td>24</td>
</tr>
<tr>
<td>Lieutenant (O-3)</td>
<td>39.3</td>
<td>10.09</td>
<td>26</td>
</tr>
<tr>
<td>Lt Commander (O-4)</td>
<td>37.0</td>
<td>10.57</td>
<td>9</td>
</tr>
<tr>
<td>Commander (O-5)</td>
<td>39.3</td>
<td>13.12</td>
<td>10</td>
</tr>
<tr>
<td>Captain (O-6)</td>
<td>39.9</td>
<td>11.71</td>
<td>5</td>
</tr>
<tr>
<td><strong>All Ranks</strong></td>
<td><strong>33.5</strong></td>
<td><strong>12.21</strong></td>
<td><strong>313</strong></td>
</tr>
</tbody>
</table>

(Seaman Apprentice/E-2) has the lowest enlisted mean P score (28.2).

A regression analysis was performed to verify that a relationship between rank and P score. Rank was operationalized by using the Basic Military Compensation (BMC) variable, which is computed from a person’s rank and seniority and therefore a function of age and education. As a surrogate for rank, BMC was expected to be a predictor of P score. Using an alpha level of .05, a correlation between P scores and BMC was found to be statistically significant,
$r(311) = .247, p < .005$, suggesting that rank is a positive predictor of $P$ score and further supporting the hypothesis that $P$ scores increase correspondingly as hierarchical rank increases.

The strong relationship between rank and $P$ score is not surprising. Coast Guard personnel of higher rank are predominately older, and the average education of officers (16.6 years) is significantly higher than enlisted (12.9 years). Rank is a function of age and education and previous DIT studies\(^{(67)}\) illustrate the importance of both age and education as predictors of moral development scores.

The study found the mean DIT $P$ score of the Coast Guard sample to be 33.5. The mean score for officers was 38.3, and the mean score for enlisted members was 31.2. At an alpha level of .05,
a $t$ test found the difference in officer and enlisted means to be statistically significant, $t(299) = 4.86, p < .005$.

The overall Coast Guard mean score is seven points lower than a large adult meta-sample mean score of 40.0. To determine if the Coast Guard mean $P$ score is statistically different from Rest’s meta-sample $P$ score, a $t$ test was employed. The overall Coast Guard sample mean of 33.5 ($SD = 12.2, N = 313$) was compared with Rest’s meta-sample mean of 40.0 ($SD = 16.7, N = 1,149$). The alpha level was .05. The $t$ test found the difference in the means to be statistically significant, $t(1460) = 8.04, p < .00005$ and suggests that the overall mean Coast Guard DIT $P$ score is significantly lower than the score of adults from society-at-large.

In a benchmark comparison, the Coast Guard officer mean was three points lower than the mean (41.0) of Elm and Nichols’s study of 243 college-educated business managers with demographic profiles similar to the Coast Guard officer sample. In this case, a $t$ test found the relationship to be statistically significant, $t(df, 329) = 1.98, p$ less than .05.

An important analysis is the test of the hypothesis that the moral development of individuals assigned to a military vessel is restricted in comparison to members assigned to shore units. The study found the $P$ scores of Coast Guardsmen assigned to ships to average 2.9 points lower than Coast Guardsmen ashore. The cross tabulations of Table 4 support the hypothesis that the extreme hierarchical design of large vessels restricts the moral reasoning of crew members. Officers ashore scored 3.5 points higher than officers afloat and enlisted ashore scored 2.6 points higher than enlisted afloat. All four categories yield $P$ scores below the 40.0 mean of Rest’s meta-sample. The $P$ scores in Table 7.6 were subjected to a two-way analysis of variance. For an alpha level of .05, the main effect of rank was statistically significant and yielded an $F$ ratio of $F(1, 299) = 20.26, p$ less than .001. The main effect of ashore/aflloat status was statistically significant and yielded an $F$ ratio of $F(1, 299) = 4.51, p$ less than .05. The interaction effect was not significant.
TABLE 4
Mean P Scores By Type of Coast Guard Unit

<table>
<thead>
<tr>
<th>Officers Afloat</th>
<th>Enlisteds Afloat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean P Score</td>
<td>Mean P Score</td>
</tr>
<tr>
<td>35.9</td>
<td>29.7</td>
</tr>
<tr>
<td>n = 35</td>
<td>n = 91</td>
</tr>
<tr>
<td>sd = 11.14</td>
<td>sd = 12.62</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Officers Ashore</th>
<th>Enlisteds Ashore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean P Score</td>
<td>Mean P Score</td>
</tr>
<tr>
<td>39.8</td>
<td>32.3</td>
</tr>
<tr>
<td>n = 53</td>
<td>n = 122</td>
</tr>
<tr>
<td>sd = 11.22</td>
<td>sd = 11.51</td>
</tr>
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</table>

The difference in P scores between Coast Guardsmen at sea and those ashore represents a methodologically strong finding. In the comparisons of Coast Guard personnel with benchmark samples, there was little control over the composition of the benchmark. It was unknown, for example, how many of Rest’s large meta-sample were from rigid hierarchies. By comparing Coast Guardsmen at sea with those ashore, the distinction between those in a rigid and less-rigid hierarchy is controlled. The only independent variable is the type of unit to which a Coast Guardsman is assigned. But why would sea duty restrict moral development? Again, this study hypothesizes that the extremely rigid hierarchy of a military vessel allows little autonomous behavior of its crew when compared to those ashore, and the result is a restriction of moral development.

SUMMARY OF FINDINGS

This research implies that a significant relationship exists between hierarchy theory and moral development theory. The findings of this research reinforce earlier theories that argue the rigidly hierarchical organization causes an individual to alter behavior from active toward passive, from equal towards subordinate, from self control toward dependency, and from having a long-term
focus to having a narrow and short-term focus. This research suggests that the rigid hierarchy adds another dimension to the pathologies: rigid hierarchy causes a restriction in an individual’s moral development, and ultimately adversely affects ethical behavior.

Through the integration of theories of hierarchy and moral development as well as the incorporation of empirical research, this study has built an argument supporting its primary hypothesis that a rigid hierarchy restricts the moral development of its members. While the study is limited by its use of one particular example of a rigid hierarchy (the Coast Guard) and one particular instrument to measure moral development (the DIT), the findings are nevertheless clear and consistent. When combined, the comparisons of $P$ scores of Coast Guardsmen with society-at-large, as well as the comparisons of Coast Guardsmen ashore and afloat, build a strong empirical argument that the way the Coast Guard is organized does have an effect on the moral development of its members. On average, and when demographic categories are controlled, Coast Guard DIT scores are lower than their civilian counterparts. While the lower DIT scores may be attributed to military culture and other environmental factors, this study argues that the primary determinant for the restriction in moral development is the rigidly hierarchical organization design.

REFERENCES


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