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Ease and control: the cognitive benefits of hierarchy

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This review identifies two cognitive benefits of social hierarchy that may contribute to hierarchy maintenance. First, research indicates that people pay attention to hierarchies automatically, early, and accurately. As a result, hierarchies feel easy to process, which increases liking and support of hierarchy. Second, through their clear, predictable structures and the opportunities they provide for personal agency, hierarchies help people satisfy their need for control, which may lead people to seek out and maintain hierarchy, especially if they currently hold a high rank or believe in social mobility. These cognitive benefits of ease and control may have effects on the performance of hierarchies and on people's willingness to change unfair structures.

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Hierarchies are everywhere. We see them across cultures, organizations, and groups, despite egalitarian norms, and even in animals [1••,2]. Further, attempts at proceeding without hierarchy are often not successful: People automatically adjust their own behavior to create a clear hierarchy [3], and informal hierarchies quickly emerge in groups that start out leaderless [4–6]. Indeed, when organizations try to remove hierarchy, employees may become dissatisfied and quit [7].

Why are social hierarchies so prevalent? Hierarchies, which are defined as a "rank order of individuals or groups with respect to a valued social dimension" [8], sometimes lead to better performance, but sometimes they do not [9,10]. Thus, it seems that there must be some other appeal of hierarchies, beyond effectiveness. In this article, we review research from the last decade, and argue that hierarchies are an appealing form of social organization because they offer two main cognitive advantages: they are easy to process and they satisfy people's need for control. As such, these cognitive benefits likely contribute to the development and maintenance of hierarchies.

Hierarchies are easy to process

Research from a variety of fields has shown that people pay attention to rank differences in power, status, and dominance (i.e. hierarchies [11]). In fact, human cognitive and neural systems seem to be set up in such a way that we can quickly and easily track information related to social hierarchy, starting even from infancy [12,13]. As we will describe, people pay attention to hierarchies automatically, early, and accurately. As a result, hierarchies feel easy to process, which increases our liking and support of hierarchy.

First, research demonstrates that people process hierarchies automatically and effortlessly. When focused on others, people automatically track cues to hierarchical relationships [13]. Indeed, research participants show different cognitive and neural responses to people of different ranks, devoting the most attentional resources to those with high ranks [14–18]. People implicitly assume that various rank cues, such as face and voice, will match up, and they are not able to process the cues quickly if they do not [19]. When focused on the self, people likewise automatically take note of their hierarchical standing [13]. For instance, participants' involuntary bodily responses to others depend on their own relative rank [20,21]. Moreover, recent research indicates that people's fundamental self-regard acts as an automatic 'hierometer' that implicitly tracks and regulates their rank compared to that of others [22•,23].

Second, this automaticity emerges early: even babies process hierarchies similarly to adults. Infants 10-months-old to 15-months-old can understand dominance hierarchies in dyads and groups, and they expect dominance relations to be asymmetric, transitive, and stable over time [24,25,26•]. By 17 months, infants even expect the more dominant individuals to get more resources [27], reflecting that they have some understanding of how dominance hierarchies play out in society. Even though infants are less skilled at making similar judgments, like transitivity, of non-social stimuli [28], infants are highly skilled at judging social hierarchies: hierarchies are easy for them.

Third, research demonstrates that these automatic processes help people perceive hierarchy *accurately*. For instance, when people view only a thin-slice of dyadic interaction, they are able to accurately determine which person has higher versus lower rank [29]. People are similarly accurate at assessing hierarchy in much more complex group settings; with a mere 200 ms glance at an entire group of individuals, observers accurately surmise overall hierarchy [30••]. People are also accurate when visual cues are removed, by relying only on auditory information [31]. Of course, some people may be differently *motivated* to perceive hierarchy accurately; for instance, one's own rank, ideology, or biases can affect accuracy, or shape which *bases* of hierarchy people deem important to assess [32–34]. But within these limitations, people's automatic impressions of hierarchy tend to be accurate.

Finally, and likely as a result of this automaticity, research demonstrates that hierarchies are *easier* to identify, learn, remember, and think about than other types of social relationships [35••]. For example, in one study, people were able to learn hierarchical power relations (e.g. Ray gives orders to Bill, and Bill takes orders from Ray) much more quickly than symmetric power relations (e.g. Ray gives orders to Bill, and Bill gives orders to Ray). In fact, people found symmetric power relations confusing. Moreover, participants also learned the hierarchical relations more quickly than symmetric relations representing friendship (e.g. Ray is friendly to Bill, and Bill is friendly to Ray). In the end, participants liked the hierarchical relationships better than the other types because they were easier to process. Indeed, when people are under cognitive load and unable to deliberate, they are more likely to endorse hierarchy than equality [36]. Thus, as a result of its processing ease, we ultimately *like* hierarchy more, especially when we do not have the time or ability to think carefully.

In sum, our brains automatically attend to and track hierarchy, starting from a young age, and do so accurately. People process hierarchies easily both when they are a part of them and when they are not. When people are presented with or involved in non-hierarchical relationships, they often find them confusing and unclear. Thus, across all of these research findings, we can see that hierarchy has a major cognitive benefit: Because hierarchy is cognitively easy, it saves us time and energy. Hierarchies may be easy to process because they are so common, because of their structure, or because we are innately wired to think in terms of hierarchy. Regardless of the reason for their ease, the fact that hierarchies are so easy to process could lead to their maintenance, as people enjoy the experience of processing ease [37].

Hierarchies give us control

In addition to being easy, hierarchies also satisfy people's need for control [1••]. Several theories, including compensatory control theory and self-determination theory, highlight personal control as a basic need [38,39], and indeed, people who feel in control report greater well-being and other positive outcomes [40]. Thus, people are motivated to believe they have control over events in their lives and to try to compensate in some way when control is lacking [38]. Hierarchy can serve these goals by providing clear and predictable structures, and by providing opportunities for personal agency.

One strategy to satisfy a need for control is to affirm structures that are clear, consistent, and simple, and hierarchies fit the bill [38]. Indeed, research indicates that when people lack control, they perceive more hierarchy and view hierarchy as more appealing, not only because hierarchy is easy, but separately because hierarchy is structured, predictable, and orderly [41••]. And because hierarchies help us feel that we have control, informal hierarchies are likely to develop in ambiguous situations [6]. This spontaneous creation of hierarchy is especially common when people have clear task goals: When people want to complete a task, they view their partner as more different from them in terms of dominance [42], possibly because creating this dominance hierarchy in their minds helps them increase their perceived control over the situation. Moreover, individual differences related to need for control predict hierarchy support at the individual and national levels [43,44].

Another strategy to satisfy a need for control is to express personal agency [38], and people can do this by holding a high rank in a hierarchy, especially one that involves a high degree of power [45,46,47•]. High-ranking members of a hierarchy are more likely to have control over resources, other people, and their own outcomes [8], and people enjoy high ranks for the autonomy they provide [47•]. Thus, it is not surprising that people who have high ranks in a hierarchy are the most likely to perpetuate the hierarchy [48]. For example, members of higher status groups, such as men, Whites, people with higher socioeconomic status, and attractive people, are more likely to endorse, and engage in behaviors that maintain, their hierarchies than members of lower status groups [49–53]. In short, hierarchies give the high-ranking people control, which is positive for them.

Because hierarchy offers a sense of control, some research finds that even lower-ranking group members might support hierarchy in some circumstances. First, in fair hierarchies, it is incentivizing to know that a deserving person can move up the ranks [54]. People who think they will eventually attain a high rank are more likely to support hierarchy [53], and they are less likely to experience negative emotions related to their low status [55•]. Thus, a belief in social mobility may help lower-ranking members feel in control and positive about the hierarchy. Second, even when the hierarchy they are a part of is

unfair, people are *motivated* to view it as fair and legitimate [56,57], possibly because justifying their social system helps them feel that they have control over their outcomes [58]. As such, in certain circumstances (e.g. when they feel threatened), some lower-ranking group members might support their hierarchy [59], because doing so helps them satisfy various needs, such as personal control [41••]. However, it seems that support of hierarchy from lower-ranking group members is much more likely if they believe that they have the *potential* to attain higher rank.

Thus, hierarchies, through their predictable structures and opportunities for personal agency, provide people with a second major cognitive benefit: a sense of control. And because hierarchies provide this sense of control, people might be likely to search for, create, or justify hierarchies wherever and whenever they can find them.

Implications and conclusions

We have argued that hierarchies have two major cognitive benefits—they are easy to process and they provide a sense of control. As a result, people like and support hierarchy, across a range of domains, tasks, and situations. The cognitive benefits of hierarchy might contribute to hierarchy maintenance not only because people like ease and control but also because people might be more likely to perform better and to resist change in a structure that satisfies their ease and control needs.

As described above, hierarchies can be processed quickly, automatically, and accurately. These features may make hierarchies easier and more pleasant for people to work in than other types of structures, potentially boosting their performance. People will not need to expend as much time or energy trying to understand how the members of the organization relate to each other, or which resources or rewards should be given to which members, and they can instead focus on the task at hand. It is important to figure out to whom to defer and whom to instruct in an organization, and people can do this easily and automatically in a hierarchy. Hierarchies also give us a sense of control, and if people believe they are operating in a controllable and predictable environment, they might have less anxiety and more confidence [38,41••], which can enable better performance [60]. Thus, the satisfaction, extra time, and confidence that result from the cognitive benefits of hierarchy may lead people to perform better in a hierarchy, making the hierarchy seem more functional.

Importantly, hierarchies vary on another key dimension beyond functionality: fairness and legitimacy. We expect that it might be easier to satisfy ease and control needs in a hierarchy that is perceived as fair, compared to unfair (see Section 'Hierarchies give us control'). At the same time, many hierarchies are deeply unfair. In these cases, the ease and control benefits of hierarchy may become liabilities when it comes time to change an unfair or illegitimate hierarchy. People resist change in general [61], and they seem to especially resist change in hierarchies. In one study, individuals avoided reversing people's ranks in a hierarchy even though doing so could make the whole structure fairer [62]. People might believe that maintaining the rank order is important for ease and control because we assume, even from a young age, that dominance relations are stable [25]. Nevertheless, we should not let the cognitive benefits of hierarchy prevent us from making a change either to a fairer basis of the hierarchy (e.g. one that is more merit-based) or to a more egalitarian structure overall. Future research should examine interventions focused on (a) convincing others about the ease and control of different bases of hierarchy (e.g. relying on arguments regarding 'the lack of controllability of gender' to shift support from patriarchy to gender-neutral hierarchies [63]) and (b) how to increase feelings of ease and control in more egalitarian structures. We do not want the ease and control benefits of hierarchy to lead us to rule out other structures that would otherwise be fair and functional.

Conflict of interest statement

Nothing declared.

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- • of special interest
- •• of outstanding interest

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