Structuring Hierarchy Concepts:

Evaluating Measures of Power, Status, Dominance, and Prestige on the Basis of an Integrative Model and Systematic Literature Review

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Abstract

Research on social hierarchy is flourishing. Often, researchers employ self- or peer-report measures to assess variables such as power or dominance. One drawback of studies in this line of research is that researchers use different scales to measure the same constructs and different researchers use the same scale but aim to measure different constructs. Moreover, hierarchy concepts have been used interchangeably and terms have been used for a specific variable but operationalized with a measure that taps into another construct. This practice leads to problems such as the jingle-jangle fallacy. As these fallacies occur at the construct and the measurement levels, we first delineate an Integrative Model of Social Hierarchy Concepts and provide definitions of different hierarchy concepts (power, status, dominance, prestige, motives regarding these variables) to establish conceptual consensus. Based on a systematic literature search, we then present 67 validated scales that aim to measure these constructs. Additionally, we discuss other measurement approaches beyond self-reports (e.g., indirect tests, language features). For a selected subset of scales, we conducted an empirical study to provide additional analyses on reliability, model fit, and exploratory factor analyses to detect similarities and differences between scales. Eventually, we derive recommendations on which scales and measures to use for assessing which hierarchy variable and how to advance measurement practices in this domain.

Keywords: power, status, dominance, prestige, motives

Public Significance Statement

Hierarchy concepts—power, status, dominance, etc.—have never been more relevant than in today's society. Being able to speak clearly about those concepts—reaching agreement about what different terms mean and what they relate to—is pivotal for both public discussion and accurate science. The present research helps to clarify these terms and thus foster communication and understanding. By identifying the best tools to measure these concepts, it

can reduce misunderstandings, promote cooperation, and support practical applications in education, workplace dynamics, and policymaking.

Structuring Hierarchy Concepts: Evaluating Measures of Power, Status, Dominance, and Prestige on the Basis of an Integrative Model and Systematic Literature Review

"The concept of power is as ancient and ubiquitous as any that social theory can boast"

—Robert A. Dahl, 1957, p. 201

As many as 65 years ago, Dahl noted the importance of studying power in the social sciences. Hierarchical differences based on power (and status) pervade every aspect of our life and affect our thinking, feeling, and behavior. Be it at work, in school, in family, or with a romantic partner, processes of influence and control always appear in, and constitute, relationship dynamics. To describe power and other hierarchy concepts succinctly, researchers refer to the vertical dimension of human relationships (Hall et al., 2005; Locke, 2006; Peeters, 2005; Wiggins, 1996). The vertical dimension (as opposed to the horizontal dimension that focuses on emotional closeness and relatedness) is about hierarchical differences and relates to concepts such as *power, status, dominance*, and *prestige*. In this research, we use *social hierarchy concepts* as an umbrella term for the aforementioned variables that have been intensively studied in the past years. Since Keltner et al. (2003) published their seminal work on power, approach, and inhibition, the number of publications dealing with power and status has sharply increased (Galinsky et al., 2015). The same applies to concepts such as dominance and prestige, which have been intensively studied since 2010, when a self-report measure for these variables was introduced (Cheng et al., 2010).

This increased attention, nonetheless, has not resulted in convergence on the meaning of key hierarchy constructs; instead, different scholars may endorse different construct definitions. More important, many different measures have been proposed to measure these constructs, resulting in measure proliferation (Elson et al., 2023; Flake & Fried, 2020; but see Iliescu et al., 2024) that may pose "a serious barrier to cumulative science" (Elson et al., 2023, p. 1; see also Anvari et al., 2024). We argue that the study of social hierarchy has suffered

from a lack of definitional and measurement coherence. Various measures claim to measure specific aspects of hierarchy but might overlap or might actually measure a different variable. This practice may be partly due to the inconsistent use of the terms *power*, *dominance, influence, prestige,* and *status*, and the lack of clear definitions (for a similar argument, see Hall et al., 2005; Overbeck, 2010). Moreover, the number of available scales and other measurement tools to assess social hierarchy concepts has increased during the last 20 years, and thus the choice of which measure to use is becoming more and more difficult.

With the present review, we aim to provide an overview of self- and peer-report scales that can be used to assess hierarchy concepts.[1] Based on distinct conceptual criteria, we categorize the scales and provide recommendations about their use based on their psychometric properties. Below, we first review the key hierarchy constructs influence, power, status, prestige, and dominance, examining variance in their definitions and identifying appropriate consensus definitions. We then discuss how these definitions converge and diverge from those used in scales; we discuss critical issues in the measurement of these constructs; and we present a systematic and comprehensive review of existing measures. Finally, to thoroughly triangulate between hierarchy measures we present results of an empirical study of the validity of a selected subset of these measures because such studies have rarely been conducted and are limited by the small number of examined measures (e.g., Altschul & Moore, 2023). The empirical study also allows us to test how well scales capture the constructs that authors set out to test, or whether a comprehensive theory may point to different interpretations of what those scales measure.

Core Concepts of Social Hierarchy

Hierarchy constructs are often used inconsistently, which may be explained by the very proliferation of constructs and measures, and their mixed labelling, which speaks to

[1] We discuss, but do not formally review, other hierarchy measures, as well.

disagreements in the literature about how to define these terms. The field offers guidance about how to identify *best* or *correct* definitions, but authors ultimately must choose—and defend their choices. We have approached the task of definition first by following earlier work that has made clear, measurable distinctions; and second, in the absence of clear precedent, by selecting definitions that offer greater clarity and distinguishability. Where researchers disagree, we offer sub-construct labels to clarify differing definitions, striving to draw clear boundaries between constructs.

To illustrate the proliferation of hierarchy constructs, consider how the construct "power" has evolved over the past 70 years. French and Raven (1959; Raven et al., 1998) identified particular *bases of power*. These included "harsh" bases such as reward and punishment, and "soft" bases such as expertise and referent power (arising from a target's identification with the agent). More recently, scholars suggested that the harsh bases reflect control of resources that offer coercive means to influence others and soft bases reflect potential to influence through the *status*—respect and admiration—that one receives from others (Blader & Chen, 2012; Fast et al., 2012; Fragale et al., 2011). In parallel, a literature arose from evolutionary biology to distinguish a *dominance* pathway to social rank, characterized by coercive means, from a *prestige* pathway, characterized by respect and admiration. Both of these pathways have generally been labeled "status" (Cheng et al., 2010; Henrich & Gil-White, 2001).

This brief history illustrates the potential for vulnerability to the issues identified above about a fragmenting literature unable to build to a cumulative science (Anvari et al., 2024; Elson et al., 2023). In an early conception, power was seen to comprise two clusters of bases, but later these were argued to reflect two distinct constructs—power and status (Blader & Chen, 2012; Fast et al., 2012; Fragale et al., 2011). At the same time, status in a broader sense was conceptualized in terms of dominance and prestige pathways (Cheng et al., 2010; Henrich & Gil-White, 2001).

The progression of understanding from French and Raven's (1959) inclusive use of the term "power" to a nuanced, articulated set of constructs has allowed researchers to study social hierarchy dynamics with greater precision. The insight that soft bases of power should properly be considered status has enabled the discovery of more complex responses to hierarchical relations: Fragale and colleagues (2011) showed that people high in power but low in status were expected to be uniquely unpleasant to interact with; Fast and colleagues (2012) showed that holding power but not status prompted actors to treat others more punitively; and Blader and Chen (2012) showed that status increases, but power decreases, justice toward others. The challenge, therefore, is not to collapse hierarchy constructs into fewer constructs; it is, instead, to reach greater clarity on what is meant when each construct is invoked—and to ensure that measures of these constructs are capturing the agreed meaning. We now discuss various hierarchy concepts and provide a visual model representing the relationships among them (the *Integrative Model of Social Hierarchy Concepts*, Figure 1). We then go on to develop theory-based definitions of the constructs, relying on past theoretical work in the psychology literature.[2]

Hierarchies (Their Motives, Antecedents, Bases, and Outcome)

Individuals hold social *ranks* defined by their relative position of merit, privilege, prominence, or resource control (see, e.g., Jiménez & Masoudi, 2019). These sets of orderings, or systems of social organization in which individuals or groups occupy different ranks, are called *hierarchies* (Magee & Galinsky, 2008; Roth & Rios, 2018).

People differ in their *motives* to climb hierarchies or attain status (Suessenbach et al., 2019). Usually, motives are considered different from traits (Winter et al., 1998). We posit that dominance and prestige are key *antecedents* of hierarchies: People differ in their trait

[2] Note that agreement weakens when other literatures—particularly those from sociology and anthropology—are taken into account. For a discussion of these differences, which are beyond the scope of this article, see Overbeck (2010).

levels of dominance and prestige, and in the degree to which they use dominance- and prestige-based strategies to pursue rank in the hierarchy. Both strategies can succeed (Henrich & Gil-White, 2001), but they tend to lead to different kinds of hierarchies. That is, hierarchies are constituted by some property that defines the rank ordering; we posit that power and status are the primary *bases* of hierarchy. And hierarchies don't exist for the sake of rank differentiation alone—they exist to define who has access to greater influence; we will argue that the *outcome* of hierarchical rank based on power and/or status is influence. Our arguments are summarized in Figure 1.

We now turn to the focal constructs. Several scholars have attempted to clarify the relationships among these constructs; we present definitions from the most comprehensive review (and, in some cases, relevant empirical) articles in Table S1 (Online Supplement [OSM]). We next discuss each construct and propose a definition that best captures prevailing scholarship. In doing so, we start at the far right side of Figure 1 (the outcome, influence) and work our way back via the bases toward the antecedents and motives.

Influence

Even in literatures very explicitly focused on influence, the construct itself is seldom explicitly defined (see, e.g., Bohns & Flynn, 2013; Cialdini & Goldstein, 2004; Yukl et al., 1996). Several scholars mention that influence is an outcome of power or, more rarely, of status (Blader & Chen, 2012; French & Raven, 1959; Sturm & Antonakis, 2015; Torelli et al., 2020). Where it is explicitly defined, scholars appear to agree that influence is *the ability to induce change in another party's behaviors, beliefs, feelings, or other states* (Anderson & Brion, 2014; Cheng & Tracy, 2014; Fast & Overbeck, 2022; French & Raven, 1959; Jiménez & Mesoudi, 2019; Sturm & Antonakis, 2015). We propose that this definition is sufficient to capture the use of the term "influence" throughout not only the hierarchy literature, but also the literature on influence principles and tactics (e.g., Cialdini & Goldstein, 2004; Yukl et al., 1996). Hence, we endorse it as the appropriate consensus definition for use by scholars.

Power

Power appears to be a difficult hierarchy construct to define, given that different scholars and disciplines have taken very different perspectives on the nature, exercise, and valence of power (Fiske & Berdahl, 2007; Lenski, 1966; Overbeck, 2010; Pratto et al., 2011). Still, the social psychological literature has achieved remarkable consensus in defining power as *asymmetric control over valued resources* leading to control over outcomes (Anderson & Brion, 2014; Blader & Chen, 2012; Cheng & Tracy, 2014; Fast et al., 2012; Fast & Overbeck, 2022; Fragale et al. 2011; Maner, 2017; Mattan et al., 2017). Those definitions that depart from this consensus generally do so by emphasizing the degree to which this resource control enables an actor to impose their will, even if the target of influence is unwilling (Fast & Overbeck, 2022; Sturm & Antonakis, 2015).

Note that several hierarchy researchers tend to define not only control over valued resources but also the ability to influence as power (typically referred to as experienced, relationship, subjective, or sense of power; Anderson et al., 2012; Keltner et al., 2003; Simpson et al., 2015; Overall et al., 2023). Nonetheless, resource control should be separated from sense of power (what we call influence), because the two aspects can have different correlates (Körner & Schütz, 2021; Weisfeld et al., 1992). Moreover, as influence is often the result of resource control and thus appears at a different stage in a process model (Figure 1), it is important to separate the two concepts (Tost, 2015). Influence can also be achieved through means other than resource control (see status section). Despite these conceptual differences, many "power" measures follow the definition of power as potential influence. Therefore, we classify power measures into two sub-construct groups: power as resource control, including power bases (Blood & Wolfe, 1960; French & Raven, 1959; Safilios-Rothschild, 1976) and power as potential influence (e.g., Anderson et al., 2012; Simpson et al., 2015).

Though we follow consensus by considering resource control the fundamental constituent of power, we note the considerable utility in recognizing *the imposition of will* as a

key factor that distinguishes power from other ways to achieve influence. French and Raven (1959) conflated bases of actual *power*—those that involve controlling resources that can be rewarded, withheld, inflicted, etc.—with others that inspire willing agreement. Subsequent scholarship has highlighted targets' willingness as the key distinction between power and not-power: When an agent induces change in an unwilling target, they do so with power. If the target is willing, another process is at play: *volitional influence* (Fast & Overbeck, 2022).

Status

In the sociological tradition, status is typically defined in terms of one's *social rank* in a hierarchy (Berger et al., 1972; Berger & Fişek, 2006; Ridgeway, 1982). If people are rank-ordered with respect to a specific criterion, the position of individuals toward the top can be understood as high social status. The classic example is *socioeconomic status* (SES), which is typically based on variables such as income, education, and occupational status.[3] Status rankings may also be based on qualities such as competence, athletic performance, appearance, etc. (Berger et al., 1972).

Equating status with rank in this manner still poses challenges to construct clarity. As noted above, hierarchies (and thus ranks) may be determined by orderings of power or of status. If status and rank are equivalent, it becomes unclear how to consider a ranking based on power. Is power then an antecedent of status? A constituent? Is rank a superordinate or a subordinate construct?

The social psychological literature offers an appropriate definition that disentangles meaning. Psychology tends to define status as *the esteem and respect that an individual holds in the eyes of others* (Anderson & Brion, 2014; Blader & Chen, 2012; Cheng & Tracy, 2014; Fast et al., 2012; Fast & Overbeck, 2022; Fragale et al., 2011; Galinsky et al., 2015; Torelli et

[3] In some work, particularly from the anthropological or primatology literatures, "dominance" is used to describe an individual's rank in a hierarchy (e.g., Cowlishaw & Dunbar, 1991; de Waal, 1986). Yet, in our efforts to define each term narrowly and precisely, with clear differences among terms, we define dominance only as discussed in the text (later). We use "social rank" to describe an individual's rank, and consider it to be a facet of status.

al., 2020). This positive regard is seen as the result of others' subjective evaluations (Blader & Chen, 2014) and, several scholars have argued, corresponds to those bases that French and Raven (1959) called "power" but that operate through eliciting admiration and voluntary compliance from targets. Using this definition of status avoids conflating the social judgment with outcomes of that judgment (rank or influence); it also avoids conflation with the strategies and characteristics that give rise to that judgment, which we discuss below.

Though the psychology-based definition of status is clear, some measures labelled "status" may reflect related, but partly distinct, constructs. First, a construct often related to status is *reputation*, defined as a "complex combination of salient personal characteristics and accomplishments, demonstrated behavior, and intended images presented over some period of time" (p. 213; Ferris et al., 2003). A reputation is based in beliefs and perceptions as well as evaluative judgments (Anderson & Shirako, 2008), giving the concept a broader scope than status; at the same time, a reputation may be a precursor to status (Anderson & Shirako, 2008). We present and discuss reputation measures along with status (respect & esteem) measures but note that it is empirically not yet clear how strongly these concepts overlap.

Second, in developmental research, scholars often distinguish between *social preference* (or acceptance; sociometric popularity) and *perceived popularity* (Parkhurst & Hopmeyer, 1998). Whereas social preference is about liking and positive peer regard, popularity is about social impact and visibility (Cillessen & Rose, 2005). Yet, in research on adults, both aspects (acceptance and popularity) are typically considered a global status factor (Anderson et al., 2015).

Finally, an influential theory of status from the sociology literature holds that status is conferred on those who have, or are perceived to have, high *competence* (*Status Characteristics Theory*; Berger et al., 1972; Berger & Fişek, 2006; Ridgeway, 1982). Indeed, ample research has shown that respect and esteem tend to be bestowed on competent people (e.g., Anderson & Kilduff, 2009; Anderson & Willer, 2014), because it signals that these

people can make a valuable contribution to others (see Hardy & van Vugt, 2006). Yet, as we argue next, competence is more properly considered an antecedent to status (prestige).

Prestige

While social psychologists were building literatures on power and status, a new theory emerged from evolutionary biology to claim that social rank may be pursued and maintained through two strategies (Henrich & Gil-White, 2001; see Cheng et al., 2010; Maner & Case, 2016). One strategy was labelled *prestige* (Henrich & Gil-White, 2001; Cheng et al., 2013), defined in part by the holder's "standing or estimation in the eyes of people" (Merriam Webster's Collegiate Dictionary, 1994, p. 923, cited in Henrich & Gil-White, 2001, p. 168) and in part by the idea that "others believe they have earned the right, if not to be obeyed, at least to have their opinions and desires considered more closely than those of ordinary people" (Henrich & Gil-White, 2001). The original authors note that "the synonym is 'influence'" (p. 168) and the pathway elicits "freely conferred deference" (p. 165).

Taking the elements of the definition one by one, construct confusion becomes clear. The 'standing or estimation' element corresponds to the consensus definition of status; indeed, much of the work in this domain has used the term 'status' interchangeably with 'social rank,' consistent with sociological and anthropological use. Yet, for psychology—which tends to be more concerned with construct precision—this similarity yields confusion. The elevated-right and deference elements suggest legitimacy or credibility, which help to produce volitional influence (Fast & Overbeck, 2022). Still, we argue that calling prestige synonymous with influence conflates a strategy to gain social rank with an outcome.

Individuals using the prestige strategy seek to demonstrate their superior skills, knowledge, and expertise to gain respect (Cheng et al., 2010; Maner & Case, 2016), which implies that the pathway leads to social rank based on status.[4] Overall, we endorse the

[4] Recent work has also shown that prestige can be a self-concept: Individuals have stable self-perceptions around their level of prestige, and these perceptions affect various life outcomes (Körner et al., 2023).

definition of prestige as *a strategy to pursue social rank by demonstrating one's value—one's skills, knowledge, and expertise—to others*, because it reflects consensus on a core element of how scholars use the term while minimizing confounds with other hierarchy constructs.

Dominance

The second social rank pursuit strategy is *dominance* (Henrich & Gil-White, 2010), defined as using agonistic strategies such as aggression, intimidation, and violence, to produce an actual or perceived threat that prompts a target's compliance. A key determinant of achieving rank through the dominance pathway is the agent's ability to induce *fear* in targets (Cheng et al., 2010; Körner et al., 2023; Henrich & Gil-White, 2010; Jiménez & Mesoudi, 2019).

Confusion around the dominance construct comes from two sources. First, like prestige, dominance is treated as a subtype of status (a privileged position seized through aggression) as well as an outcome (the imposition of the agent's will on unwilling targets). The first part is inconsistent with our consensus definition of status involving respect and esteem, and more properly corresponds to social rank. (As noted above, social rank can be based on several criteria and may also be attained through prestige.) The outcome, meanwhile, reflects change in another party (influence) induced through power. Confounding dominance as an antecedent with influence as an outcome reduces clarity in defining hierarchy variables and obscures relationships between different hierarchy concepts. Therefore, the key aspect of the dominance definition that follows past theory while minimizing confounds is *a strategy to pursue social rank by using actual or threatened force to induce fear*.

Second, 'dominance' has long been a construct in the psychology literature, entirely distinct from the dual-strategies construct—in fact, it has been used in at least three different ways. First, Big Two theories, which categorize *traits* and *social perception* into two broad dimensions, label the vertical dimension 'dominance' (Bakan, 1966; Hogan & Hogan, 1992; Wiggins, 1979). These theories subsume all hierarchy constructs under the dominance label.

Doing so risks significant confusion given the dual-strategies' focus on agonistic behaviors, though many traits high on the Big Two vertical dimension are not agonistic. Second, 'dominance' is used to describe the purpose and conduct of hierarchies themselves, such that they are based in coercion and intended to benefit the high-ranked at others' expense[5] (de Waal-Andrews et al., 2015; Mazur, 1985), in contrast to functionalist hierarchies, based in constructive interactions and intended to achieve valuable outcomes for all (Davis & Moore, 1945). A final use is *personality dominance* (e.g., Adler, 1966; Buss & Craik, 1980; Gough, 1951; Jackson, 1965). This kind of dominance is characterized by confidence, agency, and a tendency to behave forcefully and assertively (Anderson & Kilduff, 2009; Operario & Fiske, 2001). Because of the prevalence of this kind of dominance among measures, we include it in our review. Further, we classify this kind of dominance as an antecedent, because personality traits are considered precursors of power and status (Keltner et al. 2003; Simpson et al., 2015). For clarity, when reviewing measures, we will use *coercive dominance* to refer to the social rank strategy and *agentic dominance* to refer to the trait construct.

Motives

So far, we have focused on social properties, ignoring motives to pursue or acquire those properties. Yet, motives have been a key part of the hierarchy literature. People's beliefs often differ from their needs or desires. That is, feeling that one has power is not the same as feeling a need to be powerful (Bennett, 1988). Accordingly, all hierarchy concepts feature *motives* in addition to the felt property; these comprise the wishes to influence other people or control valuable resources (power motive), to be respected in the eyes of others or have a high societal position (status motive), to be admired for superior skills and expertise (prestige motive), or to be the dominating person in an interaction (dominance motive). Motives in

[5] Though its system-level focus puts it outside the scope of our review, Social Dominance Orientation (SDO; Sidanius & Pratto, 2001) is a good example of this use of "dominance." SDO posits that groups are organized hierarchically in societies, that individual and societal dynamics perpetuate unequal ranking and advantage, and that individuals high in SDO approve of such inequalities, judging them natural and right.

general can differ substantially from traits (Winter et al., 1998) and can show different relations to outcome variables (e.g., Kim et al., 2019). For example, prestige is linked to genuine self-esteem; yet, the prestige *motive* relates positively to narcissism. Note, that we use the terms *motive, desire,* and *need* synonymously in this review and consider them individual difference variables (for a similar argument, see Anderson et al., 2015; McClelland, 1984; Murray, 1938; Schultheiss, 2008; Sheldon & Schüler, 2011; Winter et al., 1998; for an overview, see Prentice et al., 2014).

Construct Categories for Review of Measures

The above discussion argues for appropriate definitions for key hierarchy constructs. Our review of measures, in contrast, shows that authors have used the same terms in different ways. To accommodate these uses, our review classifies scales both according to our theory and with reference to the authors' labels. We classify power measures as reflecting (a) power as potential *influence* (which, we argue, should properly be regarded as part of the influence construct) and (b) *power* as resource control, including power bases. Likewise, measures of status and prestige are often confounded. People using a prestige strategy contribute to their group in a prosocial and performance-enhancing way. When successful, this behavior ultimately earns them esteem and respect as well as rank (Blader & Chen, 2014; Cheng et al., 2013). Our review thus distinguishes scales by whether they measure (c) *status* as respect and esteem, (d) status as *social rank*, or (e) *prestige* as strategy to gain status. Dominance measures focus either on the strategy characterized by coercive and intimidating behavior or on the personality trait characterized by agentic, assertive, and self-assured behavior. Thus, we distinguish between (f) *coercive dominance* as a strategy to gain rank and (g) *agentic dominance*, based in personality. Finally, after having categorized the outcome and various bases and antecedents of hierarchies, we review (h) *motives* of all hierarchy concepts. We present typical correlates of the introduced hierarchy variables (Table S2, OSM).

Issues With Hierarchy Measures

In addition to the challenges posed by theoretical disunity, empirical comparability among studies on social hierarchy is limited because of the use of different scales (Gray-Little & Burks, 1983). This problem is exacerbated because some scales labeled as measuring dominance capture other variables in addition to dominance, whereas others fail to capture dominance at all and instead measure different variables. For example, in the Couple Dominance Questionnaire (Ponzi et al., 2015), partners assess who has more decisional power in various domains of the relationship. Decision-making power is traditionally considered part of the construct of power (Gray-Little & Burks, 1983), given that the ability to make a final decision grows from one's control of some resource. Decision-making power is not equivalent to dominance because dominance includes antisocial behaviors that are not assessed with decision-making measures. Researchers unacquainted with the hierarchy literature may cite findings derived from the Couple Dominance Questionnaire as evidence that dominance in the relationship is linked to a specific outcome, but their conclusions might be incorrectly stated because the scale assessed power. This distinction is important because power (when assessed as personal sense of power; which we categorize as a measure of potential influence) is only correlated at .28 to .59 with dominance (Anderson et al., 2012)—thus, the two constructs share only 8% to 35% of variance.

Furthermore, the consequences of different hierarchy variables may diverge. For example, power and status show opposite effects on justice toward others (Blader & Chen, 2012). Dominance and prestige are quite different routes to achieve rank and show distinct correlations with personality traits (Cheng et al., 2010; Cheng et al., 2013). Thus, it is important that a scale labeled with a specific hierarchy concept actually operationalize that specific concept. Unfortunately, not rarely, researchers claim to measure one construct but actually measure another. For example, in a study on the balance of power and aggression, researchers consistently used the term "power" but actually measured prestige and dominance (Volk et al., 2022). In another study (Hirschi, 2009), researchers used the term "personal

sense of power," which usually describes the perceived capability to influence others (Anderson et al., 2012), but used items capturing self-efficacy and control beliefs (i.e., personal power but not social power; Overbeck & Park, 2001).

Moreover, sometimes scales conflate *the state of* having power, dominance, etc., with *the desire for* power, dominance, etc., despite the fact that correlates of traits and motives can be quite opposite. For example, experiencing power in romantic relationships has been linked to positive outcomes (Körner & Schütz, 2021), whereas the need for power has been linked to negative outcomes (Kim et al., 2019). Yet, various scales do not clearly distinguish between feeling and desiring (Murphy et al., 2022). This problem can even occur within a scale: In the Achievement Motivation Scale, some items capture the state of being dominant ("People take notice of what I say"), whereas some items address the need for dominance ("I think I would enjoy having authority over other people"; Cassidy & Lynn, 1989).

Altogether, comparability of findings within and among studies on hierarchy has been limited because researchers may use different scales in addressing one variable, use one scale in aiming to measure different variables, use hierarchy concepts interchangeably, or use a term for a specific hierarchy variable but operationalize it with a measure that taps into another hierarchy concept. For some of these shortcomings, specific names exist: Jingle fallacy is the problem that two distinct constructs have the same name; jangle fallacy means that two constructs are identical but are titled differently (Block, 1995). These fallacies exist at the construct and the measurement level (Lawson & Robins, 2021), which is why consensus at both levels should be attained to avoid the fallacies. Greater agreement on the construct meanings of power, dominance, etc., will allow researchers to use hierarchy terms with greater consistency. Following consensus on the construct level, researchers can choose scales that clearly tap into a specific hierarchy concept. This consensus at the measurement level can thus increase comparability of study findings by ensuring that different studies purporting to speak to the same concept actually do so. Ultimately, hierarchy research should

advance if researchers rely on the same definitions and the same measures to capture a specific hierarchy variable; findings can be compared with greater confidence across and within social, personality, organizational, clinical, and school psychological studies on power, status, etc. as well as between disciplines (e.g., psychology, sociology, anthropology). Thus, as a first step to overcome limitations of self- and peer-report studies on hierarchy, we have provided a framework that clearly defines and separates hierarchy concepts. Next, we review scales and other measurement approaches, and discuss how they fit the consensus definitions.

The Present Review

In this review, we categorize scales in accordance with the definitions provided above, distinguishing among (a) power as ability to influence (an *outcome*); three hierarchy *bases*: (b) power as resource control, (c) status as respect and esteem, (d) status as social rank; three *antecedents*: (e) prestige as status strategy, (f) coercive dominance as status strategy, (g) agentic dominance; and (h) *motives* for all of these variables. First, we compiled all accessible scales, to provide a comprehensive guide to which scale measures what. Previous reviews have presented only a limited number of hierarchy scales (e.g., 4 scales in Galinsky et al., 2015; 7 scales in Cheng et al., 2014). Thus, we aim to provide a much more thorough and updated overview (with the potential to be up to date in the future as well; https://socialhierarchyscales.github.io/; Körner et al., 2024a). Additionally, we present several other measurement approaches to hierarchy (i.e., projective and implicit tests, pictorial approaches, organizational metrics, sociometric assessments, physiological markers, language features, behavior and nonverbals).

Second, we conducted an empirical study on a subset of the presented scales to examine their psychometric properties as well as underlying factors when several scales are simultaneously entered in factor analyses. Thus, we also aim to provide the largest joint analyses of hierarchy scales to date, to compare their psychometric properties on the same

sample. Ultimately, this overview may help researchers as well as practitioners to select scales dependent on their psychometric qualities and content validity.

We selected for our review measures that are focal to hierarchies, either because they assess core bases of hierarchy, describe how people navigate hierarchy, or reflect different desires to climb hierarchies. As such, all selected measures share a socio-relational perspective (Thibaut & Kelley, 1959; see also Galinsky et al., 2015). A common distinction in hierarchy research is between social power, which is reviewed in this work, and personal power, which is not reviewed—primarily because it is less social, but also because that construct merits a review on its own. Social power can reflect what we have called resource control, but in other work it represents the ability to influence, and in yet other work it refers to hierarchy concepts more broadly (Cislak et al., 2018; Lammers et al., 2009; Overbeck, 2010; Overbeck & Park, 2001). Personal power reflects constructs that are not defined by a relationship between people such as agency (Bakan, 1966), locus of control (Rotter, 1966), self-efficacy (Bandura, 1977), autonomy (Ryan & Deci, 2000), or even such a distal construct as masculine gender role orientation (Eagly et al., 2000). In short, multiple construct labels that correspond to the vertical dimension of perception and social relations (Hall et al., 2005; Locke, 2006; Peeters, 2005; Wiggins, 1996) but lack an explicitly interpersonal component, may correspond to personal power. Because of the range of these constructs and the jingle-jangle issues among them, we urge future reviewers to examine the personal power domain in a separate analysis.

Literature Overview of Scales

Method

Literature Search

Five computer databases were used to locate relevant scale validation reports published through June 2024: Business Source Ultimate, ERIC, APA PsycArticles, APA PsycInfo, and PSYNDEX. We searched for key words in the title (*power* OR *dominan** OR *prestige* OR

"social status" OR *"socioeconomic status"* OR *influence*), the abstract (*scale* OR *measure* OR *test* OR *self-report** OR *instrument* OR *assessment* OR *motive*), and the full-texts (*valid** OR *reliab** OR *"factor analysis"* OR *stability* OR *"test development"* OR *"test construction"* OR *"scale development"* OR *"scale construction"* OR *nomological* OR *psychometric**). Further, we scanned the method and reference sections of all examined full-texts to find additional scales. Finally, we checked three large test archives for included hierarchy scales (i.e., we read all scale names and examined the items if a scale had a hierarchy-related name; https://www.stevenericspector.com/mental-health-assessment-archive/, https://paulspector.com/assessments/assessment-archive/, https://zis.gesis.org/). Starting with 16,345 potentially relevant reports, we identified 65 articles that met our inclusion criteria (see Figure 2). In addition, we included working manuscripts and manuscripts under review. We contacted 29 leading researchers in the field of social hierarchy and asked whether they had non-published scales. One of these researchers provided us with two scales that we added to the final sample of 67 articles.

Inclusion and Exclusion Criteria

To be included, a study (in English or German language)[6] had to present a self- or peer-report instrument of power, status, dominance, prestige, or motives for these variables. We included both general measures and context-specific measures (e.g., power in romantic or work relationships). The studies had to present some kind of test validation beyond reporting solely internal consistency (e.g., factor analysis, validity). We excluded most measures that were validated before 2003 because studies on power and hierarchy in general increased substantially after the seminal work by Keltner et al. (2003; Galinsky et al., 2015). Nonetheless, we included older measures that have been intensively used in research (> 50 Google scholar citations or often referred to in recent articles on hierarchy). Note that

[6] The authors' native languages are English and German. Limiting the review to studies in these languages ensures accurate comprehension and interpretation of the content.

psychometric properties of psychological scales should be examined at least every eight years (Bühner et al., 2010). If measures have not been updated or their psychometric properties have not been reexamined for several years or even decades, they may no longer be valid hierarchy indicators. Making matters worse, older scales are typically not as rigorously validated as newer scales. Further, very old scales may contain item content that appears unusual for contemporary or diverse populations.

We excluded ad hoc measures because they (a) typically do not present evidence of both validity and reliability (Flake & Fried, 2020; Paunonen & Jackson, 1985), (b) are not standardized (leading to inconsistencies in item number, response options, scale anchors, scoring, etc., across studies), (c) may be limited in their generalizability as they are developed for a specific study design or purpose only (Paunonen & Jackson, 1985), and (d) would require us to include hundreds of additional scales that were often only used in a single study. Instead, the present review focuses on established or validated scales to meet the need for consistency, replicability, and the use of well-validated instruments in psychology and related fields (see Flake & Fried, 2020).

Further, because of psychometric weaknesses or limited relationships with self-report scales, we did not include projective tests, indirect measures, nomination procedures, or behavioral measures (e.g., observing and coding interaction patterns) in our systematic literature review. (We discuss such measures in the sub-section, “Additional Measurement Approaches”).

Moreover, leadership and non-hierarchy constructs such as personal power (e.g., agency, locus of control, self-efficacy, self-esteem) as well as proxies for power (e.g., demand-withdrawal patterns) were outside the scope of this review because we focused on *social* power and status. As this review is primarily a guide for social hierarchy concepts among interpersonal relationships, we excluded measures that focus on a collective instead of an individual level (e.g., power as value, Schwartz, 2012; social dominance orientation,

Sidanius & Pratto, 2001; power distance, Hofstede, 2011). Finally, we excluded measures with an extremely limited target population because the scale items are relevant for very specific jobs or populations only (i.e., relevant for less than 5% of the general population; e.g., assessing the power of Chief Nurse Executives; Adams, 2008).

Extracted Data

We extracted the following: measured construct, scale name, authors' definition of the measured construct, factors of the scale, number of items, one sample item, and whether reliability and validity were tested, as well as languages in which the scale has been validated. The measured construct was not automatically listed in the way that the scale authors suggested; rather, in an expert discussion, the authors of this review classified each measure according to the best-fitting hierarchy variable, in line with the definitions provided in the Theory section. In contrast, note that we based our evaluation criterion for content validity on both the fit between the scale author's construct definition and the items and the fit between our endorsed consensus definitions and the items (see below).

We provide a score for the overall quality of each measure based on prior research delineating quality criteria for questionnaires (Terwee et al., 2007; American Educational Research Association, American Psychological Association & National Council on Measurement in Education, 2014). We evaluated eight criteria with a "+" (good information/satisfactory statistics), "+/–" (medium information/marginal statistics), and "–" (no information/bad statistics). The criteria were *labeled construct content validity* (fit of authors' construct definition with the scale items), *consensus content validity* (fit of our consensus theory-derived definitions with the scale items), *availability* of the full scale (full items are freely accessible), *internal consistency* (defined as item interrelatedness assessed with Cronbach's alpha or McDonald's omega > .70; Nunnally & Bernstein, 1994), *stability* (test-retest reliability > .50 for at least 1 month), *item generation* (should be justified), *formal analysis for validity* (e.g., conducting confirmatory factor analysis), and *validity evidence* with

other variables (tests of nomological validity that are predominantly in line with hypotheses). A complete description of the rating scheme can be found online at OSF.

In the content validity column, we provide four separate pieces of information: (a) the labeled-construct evaluation (reflecting the fit between the scale author's construct definition and the scale items), (b) the consensus evaluation (reflecting the fit between the hierarchy definitions proposed in this work and the scale items), (c) the measured variable(s) (e.g., "ability to influence" reflects how we categorized this scale), and (d) where relevant, a list of subscales. Quality of the scales was coded by two independent raters (Cooper, 2016). Average interrater agreement was very high for the eight criteria, M(ICC[2, k]) = .96, $\text{Range}_{\text{ICC}}$ .83 to 1.00. Disagreements (N = 17) were resolved via discussion among the authors. The quality score could range from 0.00 to 8.00 with 0.50 steps between.

Transparency and Openness

We followed the PRISMA reporting guidelines for the literature search. The coding of the quality criteria is displayed in the OSM (https://osf.io/ckg4v/). This review was not preregistered.

Results

We identified 67 validated scales published between 1951 and 2023 and thus spanning a period of 72 years. Most scales were published between 2006 and 2022.[7] The scales were on average 19 items long (SD = 18, Range: 1 to 100) and had between one and eleven hierarchy-relevant factors (M = 2, SD = 2). There was a small trend toward using fewer items in more recently published scales, $r(64) = -.12$, $p = .351$. All reports we reviewed were published in English and thus provide items in English. Also, most scales were developed and validated with English-speaking participants (91%). Three articles reported scales developed with German participants, two with Chinese, and one with Dutch participants. Two reports

[7] Note, however, that we did not include rarely used scales before 2003. Further, two scales in our literature review have not yet been officially published.

developed and validated their scale with English-speaking participants and with participants who speak other languages. In addition, we identified several other reports that validated one of the 67 original scales for other languages (i.e., Afrikaans, Chinese, Danish, Dutch, French, German, Greek, Hebrew, Italian, Japanese, Malaysian, Polish, Portuguese, Romanian, Spanish, Turkish; see Languages column in Table 1). Finally, most investigations relied on mixed samples including both student and community participants within the same study or across several studies (35.6%). Some studies used only student samples (30.5%) and some only community samples (25.4%). A small number used children (5.1%) or patients with mental health conditions (3.4%) as participants.[8]

Power

In Table 1, scales with quality scores ≥ 6 are presented concisely (full list of scales is in the OSM and available at https://socialhierarchyscales.github.io/; Körner et al., 2024a). The first two sections focus mostly on potential to influence in general and romance contexts, whereas the next two sections focus on potential influence and resource control in work contexts. At the end, we present specific concepts of power.

Potential Influence—General Contexts. The *Personal Sense of Power Scale* (Anderson et al., 2012) assesses an individual's perceived capability to influence other people. The scale is related to several relevant traits and criteria and has been intensively validated in German (Körner et al., 2022), Italian (Paladino et al., 2022) and Spanish (Willis et al., 2016). The scale shows high internal consistency with a generalized version as well as specific versions to assess, for example, perceived influence in close intimate relationships. The scale has become standard for researchers wishing to study generalized power feelings. It is often described as a measure of potential influence, but researchers simplify findings derived from the scale and often report that power is linked to a specific variable. We think that more

[8] Sample type was double-coded and showed high interrater agreement, Cohen's κ = .95.

precise writing as outlined in our theory may help to provide a clearer assessment of what the Sense of Power Scale captures (potential influence instead of power as resource control). Note that this issue applies to all measures discussed in the potential influence sections.

A similar and recently developed scale with good psychometric properties is the *Feeling Powerful and Desiring Power Scale* (Murphy et al., 2022). The felt power subscale contains some items of the Personal Sense of Power Scale and some new items. The authors show the opposing correlates of felt power and the power motive. We recommend using this scale to study how felt power and power motive relate differently to outcomes.

Potential Influence—Romance Contexts. The *Relationship Power Inventory* (Farrell et al., 2015) allows the computation of scale scores for the experienced power of relationship partners. Four factors are distinguished: *Process power* describes control over the decision-making process whereas *outcome power* captures who has the final say. Both components can refer to *respondent's power* or the *power of the partner*. Participants choose five to seven of ten domains in which power is exercised (e.g., finances, parenting, how to spend time together) and judge how important the domains are for themselves. Afterwards, they complete 20 items for each of the selected domains. Overall, the scale scores are psychometrically sound. The scale authors also provide a more economical variant, which generates an overall score for the four factors using only 20 items, instead of the full measure's 100 to 140 items.

Other inventories to assess power in romantic relationships are displayed in Table 1 (see also Table S3). Some are valid for every type of relationship (e.g., Beach & Tesser, 1993; Kroupin, 2011; LeBaron et al., 2019; Luttrell et al., 2018; Stets & Pirog-Good, 1990); others have a specific target population (e.g., female adolescents, Wang et al., 2007; gay men, Neilands et al., 2019, though we classify the latter scale as a measure of coercive dominance). Still, researchers should be careful in selecting scales because sometimes power is conflated with other variables (e.g., with dominance in the *Power/Control Scales* by Kroupin, 2011). Sometimes, the scale name suggests that another construct is measured than what the item

content suggests. For example, the *Couple Dominance Scale* (Ponzi et al., 2015), addresses what we have defined as power, and not agentic or coercive dominance, as the authors acknowledge ("…we operationalized dominance as decision-making power"; p. 43, Ponzi et al., 2015).

The *Sexual Relationship Power Scale* (SRPS; Pulerwitz et al., 2000; for an overview, see Closson et al., 2022) has become the main instrument for studying power differences in HIV research. The *decision-making dominance* subscale assesses the balance of decision-making power (i.e., who has more say about specific domains: the respondent, the partner, or both), whereas the *relationship control* subscale asks how much a partner controls what the other does. The authors of a comprehensive review about the use of the SRPS recommend the scale scores for the total items as well as for the relationship control subscale; yet, the decision-making subscale exhibits psychometric deficiencies and should be adapted to the specific context of interest to increase reliability (McMahon et al., 2015).

Potential Influence—Work Context. If researchers wish to obtain an overall score of a supervisor's power, they might use the *Perceived Supervisor Social Power* scale (Chénard-Poirier et al., 2021) or the *Global Power Scale* (Nesler et al., 1999). These scales focus on power as perceived influence. We recommend using the Perceived Supervisor Social Power scale because it shows superior psychometric qualities to the Global Power Scale (see Table 1, S3), but the items also capture social rank.

Resource Control—Work Context. Instruments presented in this section typically conceive of power as outcome control and aim to assess the power of a person's supervisor. (Note, however, that these scales could be simply rephrased to provide a self-report instrument.) First, we present instruments based on variants of the well-known typology of power bases (French & Raven, 1959). Then, we present first a two-factorial scale that has been intensively used in research but needs more thorough examination, and second a work-related measure that distinguishes between power and status.

One very prominent measure is Hinkin and Schriesheim's (1989) *New Power Scales,* which rely on French and Raven's (1959) conceptualization of power bases. The subscales for *reward* (providing rewards or removing negative valences) and *coercive* (administering punishment) power clearly map onto the definition of power as control (Keltner et al., 2003). *Legitimate* power is power by virtue of norms or values. *Expert* power is based on knowledge as a resource to influence others. Still, note that this power base might also be understood as prestige, because prestige is about granted influence due to superior knowledge or skills; in addition, this power base may overlap with status because expertise can be a source of respect and esteem. *Referent* power describes the subordinate's wish to fulfill the power holder's goals and to become associated with the power holder, consistent with our definition of status. Altogether, some power bases do not exclusively address power and may be better understood as proxies of other hierarchy variables, which is why some researchers have suggested that they should be considered bases of influence (Blader & Chen, 2014). The same issue applies to the *Rahim Leader Power Inventory* (Rahim, 1988) and the *Social Power Scales* (Frost & Stahelski, 1988), which have the same factor structure as the New Power Scales. Yet, the scale authors only minimally tested the nomological and criterion validity of their scales. Further, the Social Power Scales received a poor evaluation in our analysis as the authors did not report reliability, stability, and nomological validity.

A more detailed division of power bases is provided in the *Interpersonal Power Inventory,* with 11 power bases in total (Raven et al., 1998). Both the New Power Scales and the Interpersonal Power Inventory show convincing evidence on nomological validity and have been used in numerous studies (e.g., Koslowsky et al., 2001), but the Interpersonal Power Inventory has a somewhat debated factor structure.

In the work-related *Power Scales* (Yukl & Falbe, 1991), the authors distinguish between *positional power* (e.g., punishments, rewards) and *personal power* (e.g., expertise, likeability), although the terms "positional power" and "personal power" tend to have different meanings

elsewhere in the literature. The positional power subscale of Yukl and Falbe's (1991) addresses power as resource control. Researchers should be aware that "positional power" is usually used in the literature on close relationships to refer to objective power (Kim et al., 2019); however, the scale focuses more on perceptions than on objective criteria. Further, the notion of "position" suggests a focus on social rank, though the scale does not assess rank. The *Power Scales'* personal power subscale captures an individual's status (as respect and esteem in the eyes of others) and skills (similar to prestige). Its name may be somewhat misleading, given the definition of personal power in terms of agency, self-efficacy, and internal locus of control (Overbeck, 2010; Overbeck & Park, 2001). Moreover, the personal power subscale is much more strongly related to task commitment and effectiveness in carrying out job responsibilities than the positional power subscale (Yukl & Falbe, 1991), which further indicates that Yukl and Falbe's "personal power" can be better conceptualized as "prestige": Prestige is marked by competency and hard-working behaviors (Henrich & Gil-White, 2001). Overall, although the *Power Scales* show good psychometric properties, researchers should use more appropriate labels (e.g., resource control) and acknowledge that hierarchy concepts are mixed (e.g., status and prestige in the personal power subscale) when applying the scale.

Finally, the *Perceived Power and Perceived Status Scales* (Yu et al., 2019) are well-developed and -validated work-related self-report instruments to clearly distinguish between workplace power and workplace status. An advantage of these measures is that they were developed as self-report measures and not as a peer-report instrument to assess a supervisor.

Concepts of Power. The next scales focus on specific contexts, conceptualizations, or phenomena of power. The *Leader's Relational Power Scale* (Zhao et al., 2016) provides scale scores for the degree of relational power, that is, power that originates from personal relationships ("who you know"). Individuals with relational power can influence others because of their specific relationship (similar to the referent power base; French & Raven,

1959) or their interpersonal networks that provide them with resources. The authors report good psychometric properties for the scale. Finally, the *Consumer Power Scale* (Akhavannasab et al., 2022), based on a sophisticated scale development procedure, assesses consumers' sense of power (i.e., influence) in the specific relationship between the consumer and a brand or firm.

The *Lay Theories About Power Acquisition Scale* (LTPAS; Belmi & Laurin, 2016) and the *Theories of Power Scale* (TOPS; ten Brinke & Keltner, 2020) address lay beliefs about power. The scales distinguish between a positive, prosocial construction of power—power as value to facilitate coordination and cooperation (LTPAS: "power through prosociality," TOPS: "collaborative power"); and a negative, Machiavellianism construction of power—power as an end in itself, to be grabbed to fulfill one's own selfish goals (LTPAS: "power through politics," TOPS: "coercive power"). The dual components of the scales show convincing links to personality, Dark Triad traits, morality, and other hierarchy variables, and thus allow future researchers to test for moderating effects (e.g., does power increase stereotyping in people with a collaborative belief about power?).

To assess the degree of alternating between states of high and low power, researchers can rely on the *Power Fluctuation Scale* (Anicich et al., 2020), which is an intensively validated and theoretically-based 6-item self-report scale. The *Reactions to Power Scale* (Warren, 2014) addresses how people perceive the use of several different power bases. For example, participants receive a description of legitimate power (i.e., one person influences another person based on the influencer's position, e.g., being a supervisor, to obtain a desired outcome) and respond to statements concerning the approval, fairness, justness, etc. about the use of this power base.

Status

Respect and Admiration. The first group of status scales focuses on status as respect and admiration in the eyes of others (Magee & Galinsky, 2008). We have already presented

the well-validated *Perceived Power and Perceived Status Scales* (Yu et al., 2019), which assesses status as respect and esteem.

Other prominent measures are the *Reputation Scale* by Hochwarter et al. (2007) and the *Multidimensional Reputation Scale* by Zinko et al. (2016). We recommend the Multidimensional Reputation Scale if authors aim for a fine-grained assessment (social, task, and integrity reputation). These scales are tailored for assessing status in work-related settings. To assess social status of pupils, researchers may use the *Children's Social Status Scale* (Rodkin et al., 2013), which distinguishes preference (i.e., likability and acceptance) and popularity (i.e., social visibility, reputation, and impact; Parkhurst & Hopmeyer, 1998).

Finally, the authors of the *Position-Reputation-Information Scale* (Berl et al., 2020) describe their instrument in terms of prestige. The *information* factor ("educated," "intelligent") may tap into prestige as defined in this work. The *position* factor ("wealthy," "powerful," "high social status") seems to assess an individual's status in terms of rank, whereas the *reputation* factor reflects status as respect and esteem ("reputable," "respected"). Researchers using this scale should carefully interpret the subscales. In particular, because the position factor encompasses both power and status, it may not be fit for purpose when researchers wish to clearly distinguish between hierarchy variables.

Social Rank. The *Workplace Status Scale* (Djurdjevic et al., 2017) is an intensively validated scale for organizational settings. The authors define workplace status as "an employee's relative standing in an organization, as characterized by the respect, prominence, and prestige he or she possesses in the eyes of other organizational members" (p. 2, Djurdjevic et al., 2017). Consequently, the scale encompasses three aspects: *respect* (social worth derived from personal attributes and accomplishments), *prominence* (standing out, being visible), and *prestige* (competence, commitment). Workplace status has been convincingly distinguished from other measures of power and popularity. Yet, the authors' definition of workplace status conflates respect and esteem with social rank. We list this scale

here because our empirical study will show that this measure is more about rank than respect and esteem.

The most widely used instrument for measuring subjective social status in terms of rank is the *MacArthur Scale of Social Status* (Adler et al., 2000). The "scale" has only one item, but we include it in this review due to its prominence in social and organizational psychology studies and predictive validity. For example, the scale score has been repeatedly linked with mental and physical symptoms in studies of health psychology and shows higher predictive validity than objective social status (SES). Participants tick their relative societal standing on a 10-point scale superimposed on an image of a ladder; response options range from the bottom, representing the people who are the worst off with respect to money, education, and jobs, to the top, representing people who are best off with respect to money, education, and jobs. Psychometrically examined variants of the scale exist for adolescents to indicate their familial placement in society or their personal placement in the school community (Goodman et al., 2007) as well as for past (family of origin) or future-directed (expected status in 10 years; Shane & Heckhausen, 2013) status. Note that sociometric nominations are also often used to assess status; yet, to our knowledge, no general and validated scale exists for a nomination procedure (except the *Children's Social Status Scale*).

The *Differential Status Identity Scale* (Thompson & Subich, 2006) is a multidimensional instrument to assess status in terms of rank (or social class) and distinguishes between economic resources (e.g., income, personal assets), social power (e.g., influence, political-legal power), and social prestige (e.g., level of consumption). The social prestige subscale provides an assessment of social rank and not of prestige as defined in seminal hierarchy literature (e.g., Henrich & Gil-White, 2001; Galinsky et al., 2015; Overbeck, 2010).

The presented scales focus on subjective social status. To measure objective social status (i.e., SES), various indices have been provided in the literature. Due to their

dependence on the country in which SES is assessed and no agreement about factors that ultimately constitute SES (Oakes & Rossi, 2003), we do not present such measures in Table 1. Most often, researchers assess the "Big Three": an individual's income, educational level (or parental education), and/or occupational position (e.g., Kraus et al., 2009). Sometimes wealth and neighborhood context are added, or more complex indices. For example, Oakes and Rossi (2003) proposed assessing material (e.g., income, real property), human (skills and capabilities), and social (e.g., social network and qualities of its members) capital.

Dominance and Prestige

Agentic Dominance—General Measures. With the *Revised Interpersonal Adjective Scale* (Wiggins et al., 1988), participants rate themselves on a series of adjectives. These adjectives can be projected onto a circumplex model with a dominant-submissive and a warm-cold dimension. Similarly, the *Impact Message Inventory-Circumplex* (IMI-C; Kiesler & Schmidt, 2006) is based on a circumplex structure with similar dimensions. The scale assesses the respondent's experiences based on prior interactions between the respondent and the target; that is, the respondent indicates how the target feels in presence of the respondent.

Some broad personality inventories include subscales on trait dominance; two examples are the *Personality Research Form* (PRF; Jackson, 1965) and the *California Psychological Inventory* (CPI; Gough, 1951). These inventories have been revised and updated, but whether the convincing psychometric properties reported between 1950 and 2000 still hold in recent years needs to be shown. We do not recommend using the CPI for measuring dominance, as the items tend to focus on leadership—so much so that the measure has often been used as a tool for leadership selection and development (Kulas et al., 2011).

The Social Potency subscale of the *Multidimensional Personality Questionnaire* (Tellegen, 1990; Patrick et al., 2002) encompasses items that reflect enjoying dominance, being in charge and persuasive, and being a leader, but this subscale has been criticized for conflating having and wanting dominance (Murphy et al., 2022). Further, the social potency

items tap into various hierarchy concepts (but might be most characteristic of the dominance trait). The *Dominance-Submissiveness Scale* (Mehrabian & Hines, 1978) is another early scale to assess an individual's dominance and has often been used in research. Yet, no formal analysis appears to have been conducted in the original publication.

The *International Personality Item Pool* (IPIP; Goldberg et al., 2006) contains over 3,000 items and allows for computing dominance scores that are related to other inventories. Six items can be used to assess dominance in like manner to the Comprehensive Assessment of Traits Relevant to Personality Disorder-Static Form (CAT-PD-SF; Simms et al., 2011). Yet, the IPIP items mix trait descriptions with motives. The eleven IPIP items that reflect dominance related to the CPI show high face validity, yet have been criticized for not being similar enough to the original CPI dominance scale (Goldberg et al., 2006). Still, as the IPIP-CPI items represent a self-aggrandizing component of dominance, they may better capture agentic dominance than the original CPI, which includes prosocial items that resemble leadership more than dominance. The most convincing validity evidence exists for the four IPIP items that reflect dominance as it is captured in the interpersonal circumplex (Markey & Markey, 2009). Note that the items of the assured-dominant subscale have a strong histrionic component and do not tap into different facets of dominance (e.g., assertiveness, agency).

Finally, the dominance subscale of the *Rank Style with Peers Questionnaire* (Zuroff et al., 2010) can be used to assess agentic dominance in group contexts with peers. The scale was thoroughly developed and validated, though the authors do not report reliability values.

Agentic Dominance—Romantic Relationships. Researchers wishing to assess dominance in romantic relationships might use the *Dominance Scale* by Hamby (1996). In particular, the subscales *authority* and *restrictiveness* tap into domineering attitudes and correlate more highly with psychological aggression and physical assault than does the disparagement scale, which seems instead to address aspects of partner's social status (e.g., "People usually like my partner"). The Hamby Dominance Scale has been adapted for another

instrument: Three items of each subscale were used in the dominance subscale of the Personal and Relationships Profile (Straus et al., 1999), a measure commonly used to screen family violence.

Agentic Dominance—Clinical Contexts. Similar to dominance as personality trait is the *fearless-dominance factor* that can be derived from the Psychopathic Personality Inventory (PPI; Benning, 2016; Edens & McDermott, 2010). The PPI consists of eight subscales; seven have repeatedly been used to provide scale scores for two higher-order factors: impulsive-antisociality and fearless-dominance (Blonigen et al., 2006). Fearless-dominance comprises three subscales, social potency, stress immunity, and fearlessness, and is characterized by interpersonal dominance and boldness, a lack of fear and anxiety, and the desire for thrilling adventures and risk-seeking. Several established personality scales have been analyzed to derive scores for fearless-dominance; these include the IPIP-NEO, the HEXACO-PI-R, the MMPI-2-RF, the MPQ, and the NEO-PI-R (see e.g. Witt et al., 2009). Fearless-dominance scores have shown remarkably high stability across a span of ten years (Blonigen et al., 2006). Nonetheless, perhaps surprisingly, these scores show few associations with antisocial behavior and violence (Miller & Lynam, 2012); thus, it has been argued that fearless-dominance represents a subclinical form of psychopathy in well-adjusted individuals rather than a pathological feature of psychopaths (Miller & Lynam, 2012).

Coercive Dominance and Prestige. Finally, like prestige, dominance is also understood as an antecedent of hierarchy. The *Dominance Prestige Scales* (Cheng et al., 2010) have become the standard instrument to assess dominance and prestige as strategies. The scale originates from the *Self-Perceived Social Status Scale* (Buttermore, 2004). Both self- and peer-report scale scores of the Dominance Prestige Scales have been convincingly validated and shown to predict relevant outcomes such as social rank (Cheng et al., 2013). Yet, the dominance subscale has been criticized for conflating motive-related items with strategy- or trait-related items (Suessenbach et al., 2019), which may explain why authors

have criticized the model fit of the Dominance Prestige Scales (see Berl et al., 2020). Despite this limitation, the scale is of high utility due to its several relevant correlates.

A related measure, also based on the dominance prestige framework (Henrich & Gil-White, 2001; Cheng et al, 2013), is the *Dominance Prestige Questionnaire* (Körner et al., 2023). This scale has the advantage of not conflating motives with strategies and assesses stable dominance and prestige representations of the self-concept. In particular, the dominance scale is helpful to overcome the limitations of the dominance subscale of the Dominance Prestige Scales.

Motives for Power, Status, Dominance, and Prestige

Generally, we group the measures below based on the construct that the scale purports to measure, but, in many cases, our analysis suggests that a different classification fits better.

Power Motives. An intensively used scale to assess the explicit power motive is the power subscale of the *Unified Motive Scale* (UMS; Schönbrodt & Gerstenberg, 2012). Despite a few items focusing on leadership and prestige, most items reflect influence and control. Some items are formulated as statements whereas others are formulated as goals. Overall, the power motive subscale of the UMS is a reliable and economical instrument with convincing validity evidence. Another scale to assess the power motive is the *Index of Personal Reactions* (Bennett, 1988), that distinguishes between the need for power and the need for influence. The scale shows good psychometric properties. Researchers who wish to distinguish between personalized (i.e., desiring power to fulfill self-serving and self-aggrandizing goals) and socialized (i.e., desiring power for prosociality and responsibility) power could use the recently developed and validated *Need for Power Scale* (Moon et al., 2022).

Dominance and Prestige Motives. The dominance subscale of the *Manifest Needs Questionnaire* (Steers & Braunstein, 1976) is an early self-report instrument on the explicit dominance motive (targeting agentic dominance). The *Achievement Motivation Scale* (AMS;

Cassidy & Lynn, 1989) is also an old but still often used scale. The subscales *dominance* and *status aspiration* are relevant to hierarchy and are described as motives (despite some trait items). A shortcoming of the scale is that the dominance subscale addresses influence, authority, and leadership, and could thus also be conceptualized as power instead of dominance. Researchers have used the dominance and status aspiration subscales in research on dominance and prestige (e.g., Maner & Mead, 2010), yet future research should examine whether findings from the AMS are more closely related to dominance and prestige or to power and status.

Questions about construct validity may also implicate the *Motive Profile Following the Zurich Model* (Schönbrodt et al., 2009): The authors distinguish five motives, of which the power and prestige motives are relevant to our review. The authors describe the power motive as dealing with dominance issues, but due to its very high correlation with dominance from the PRF, we judge that it actually assesses an individual's desire for dominance. The prestige subscale seems to assess a more general desire for respect and esteem and could thus be understood as the desire for status.

Finally, an extensively validated instrument to assess an individual's dominance and prestige motives is the *Dominance-Prestige-Leadership Scale* (Suessenbach et al., 2019). The dominance subscale is strongly related to narcissistic rivalry and aggression. Validity evidence for the prestige subscale is somewhat mixed according to the authors because the prestige motive relates to morality but not to prosocial behavior.

Status Motives. The *Concern for Reputation Scale* (de Cremer & Tyler, 2005) shows similarity to a general status motive but did not receive a very good quality rating because it has not been thoroughly developed. Another option to assess need for status is the desire for status subscale from the *Machiavellianism Self-Report Scale* (Dahling et al., 2009). Yet, the items of this scale somewhat conflate status with power (example: "I want to be rich and powerful someday"). For research focused on student or child samples, investigators can

consider the *Social Goal Questionnaire* (Jarvinen & Nicholls, 1996), which assesses status (sociometric popularity) and dominance motives. This measure shows expected correlations with satisfaction with social relationships, although the validation study does not report associations with broad personality traits and self-evaluations.

Additional Measurement Approaches

Next, we discuss alternative measurement approaches beyond standard self- and peer-report scales. We discuss the approaches in a narrative fashion, as scale characteristics and measures used for psychometric scales are often not available or applicable for these alternatives. These measures often conflate hierarchy concepts and may thus not be suitable to assess one specific concept (see Table S1). Still, in combination with validated scales, they may allow for strong multi-method inferences in hierarchy research (Campbell & Fiske, 1959). Figure 3 provides an overview, along with major advantages and disadvantages.

Projective and Indirect Tests

The measures discussed in this section mostly target the implicit power motive, which reflects the pleasure individuals derive from situations in which they can exercise influence (Koestner et al., 1991). It thus differs from the explicit power motive, which refers to power-related goals (Galinsky et al., 2015, McClelland et al., 1989).

The implicit power motive is usually assessed with projective tests such as the *Thematic Apperception Test* (TAT; Morgan & Murray, 1935), the *Picture Story Exercise* (PSE; McClelland et al., 1989; for methodological aspects, see Schultheiss & Pang, 2007), or the *Operant Motive Test* (OMT, Baumann et al, 2005; Kuhl & Scheffer, 1999). In all tests, participants are shown ambiguous images and asked to tell a story describing how the situation came about and how it will evolve. These stories are then analyzed to uncover underlying motives, ideally based on standardized scoring schemes (Veroff, 1957; Winter, 1994). While the TAT is the oldest variant, the PSE is a more recent and experimentally-validated research version of the TAT. The pictures, instructions, and coding system typically

vary and are adapted to the current research purpose; because of this variability, the PSE is considered more a class of tests than one standard measure (Pang, 2010). The OMT is a bit different because participants are not required to write a story, but instead briefly answer questions about each picture (e.g., “How does the person feel?”).

Projective measures are subject to intense debate (Hibbard, 2003; Lilienfeld et al., 2000; Lundy, 1985). Critics argue that the TAT’s internal consistency and test-retest reliability are low, and it is often not used in standardized ways (Lilienfeld et al., 2000). In contrast, supporters promote standardized scoring schemes and argue that internal consistency (e.g., Cronbach’s alpha) is not an appropriate indicator of TAT or PSE reliability, whereas interrater reliability is high (Cramer, 1999; Lundy, 1985; though interrater reliability indicates objectivity, not reliability). Validity and reliability evidence for the PSE (using Winter’s, 1994, scoring scheme for the power motive) is much better than for the TAT. The OMT has somewhat greater standardization and may thus show highest reliability. Moreover, compared with the TAT and PSE, the OMT takes less time to administer and interpret (Baumann et al., 2010).

OMT scores have been found to correlate positively with PSE scores, but the correlations are small to medium; OMT scores are not related to the PRF dominance subscale (Schüler et al., 2015). The PSE does not correlate with self-reported power and dominance (Stanton & Schultheiss, 2009), even though all these concepts are about social hierarchy.

A different approach, the *Implicit Association Test* (IAT; Greenwald et al., 1998) uses reaction times to measure the implicit power motive (Sheldon et al., 2007). Among several variants, contrasting pictorial (vs. verbal) stimuli and affective (e.g., “attractive” vs. “not attractive”) versus self-concept (e.g., “I” vs. “others”) words provides scores correlating most strongly with the implicit power motive from the PSE (Slabbinck et al., 2011, 2013).

Though the above measures purport to measure "power," the stimuli and imagery scoring schemes reflect images and words that relate to prestige, status, and dominance. Thus, it remains somewhat unclear which specific hierarchy motives these measures assess.

The *Multi-Motive Grid* (MMG; Schmalt, 1987; Sokolowski et al., 2000) invites participants to select statements from a provided set (12 in total) that would be typical of themselves if they were in a specific situation that is depicted in each of 14 pictures. Though the developers of the MMG consider this semi-projective measure an assessment of implicit motives (power, achievement and affiliation; e.g., Langens & Schmalt, 2008), others argue that the measure taps into explicit motives (Schüler et al., 2015). This argument is supported by correlations with self-report measures that assess the explicit power motive, rather than with indirect measures such as the PSE or OMT (e.g., Schultheiss et al., 2009; Schüler et al., 2015).

The implicit power motive can also be assessed through a *Conditional Reasoning Test* (CRT, Galić et al., 2021), an indirect measure that presents participants with twelve inductive reasoning problems. Each problem includes a set of premises, and participants identify the most reasonable solution based on those premises. Each problem contains several logically plausible solutions that are associated with different justification mechanisms and motives, with the chosen solution said to reflect participants' implicit motives (LeBreton et al., 2020).

Pictorial Approaches

Pictorial measures have been used for a nonverbal approach to measuring hierarchy variables. The *Self-Assessment Manikin Scale* is an often-used measure to assess dominance (and pleasure and arousal) in response to an event or object (Bradley & Lang, 1994; Hodes et al., 1985). Participants are asked to tick a figure (Manikin) that best represents how they feel. Participants are presented with five figures that vary in size from very small (low dominance) to very large (high dominance) and are asked to select the one that best represents their emotional response. The task can easily be used as a different version of self-report tool (e.g.,

"Please select the figure that best represents you") and has been used in dozens of studies (Bynion & Feldner, 2020). This single-item measure allows for quick assessment for both adults and children, including participants not fluent in the language of the researchers. Yet, it does not reflect the full range of the dominance construct, as a single item cannot assess various aspects of agentic dominance (e.g., assertiveness, confidence, self-assurance). Moreover, it may conflate social power or dominance with personal power (Overbeck & Park, 2001) because the scale has no social component. Thus, researchers should adopt appropriate instructions to clearly refer to dominance when using this measure.

Murphy et al. (2022) developed another *pictorial measure* of power, presenting four pictures that show a central figure surrounded by other figures. The pictures vary in the relative size of the central versus surrounding figures; the larger the central figure (relative to the others), the more power the image is said to represent. Another five items present pairs of images depicting pyramid-shaped hierarchies (Murphy et al., 2022). The items vary the level at which the focal figure is positioned in the pyramid, with the level representing the figure's power. In both tasks, participants are asked which image best represents how much power they have or want. These measures correlated strongly with self-reported power (Murphy et al., 2022). On its face, the measure seems to capture social rank, but whether it further captures power, ability to influence, or something else is unclear. Further, the measure must be thoroughly validated before we can recommend its use.

Finally, the *Spatial Power Motivation Scale* (Schoel et al., 2015) is a pictorial measure based on the robust link between power and verticality (Schubert, 2005). The measure consists of 56 picture pairs, each presenting a white and a black circle in two different angles. Participants imagine being the black circle and then choose the pictures which suit them best. The higher the angle of the chosen picture (e.g., black circle directly above white circle), the higher the power motivation. Though the measure was intensively validated, we can only say

that it captures social rank. It is not evident that it captures any other single hierarchy variable. Moreover, it is not clear whether motives (as proposed by the authors) or traits are assessed.

Sociometric Assessments

Nomination procedures are often used in school contexts to assess status (Cillessen & Marks, 2017). Usually, students receive rosters of classmates' names and circle names to answer specific questions. For example, they are asked to circle (a) three students whom they like best and (b) three they like least (Parkhurst & Hopmeyer, 1998). Nominations are summed and standardized across respondents to create individual target scores for (a) liking and (b) dislike. The *difference* between these scores is standardized and reflects social preference. The *sum* of the liking and dislike scores is standardized and represents social impact (Coie et al., 1982; Coie & Dodge, 1983; Peery, 1979). Other nomination items can be used to assess power or dominance—for example, the Revised Class Play (Masten et al, 1985) provides items such as "others listen to—this person has a lot of influence" (Lease et al., 2002).

Another method to assess hierarchy concepts is *social network analysis* (SNA; Wasserman & Faust, 1994). The following steps are most important: A network comprised of nodes (actors) and edges (links) is identified, and often visualized as a sociogram. Centrality measures such as degree (number of direct connections a node has), betweenness (the extent to which a node lies on the shortest paths between others), closeness (how close a node is to all other nodes), and eigenvector centrality (a node's influence based on the influence of its neighbors) are computed to quantify (potential) influence (see Freeman, 1977; Tabassum et al., 2018). Finally, structural holes and brokers who connect different parts of the network and control information flow are examined. Structural holes are gaps between contacts in a social network, who possess different information and resources. Brokers bridge these structural holes and have access to diverse information and groups (Burt, 2004). Thus, brokers have more power than others (e.g., they gain early access to diverse information; connect different

groups and control flow of resources; influence interactions between different groups; receive greater social capital). SNA centrality measures have been reported to correlate positively with social rank and ability to influence (e.g., Bonacich, 1987; Burkhardt & Brass, 1990; Ibarra, 1993). In our view, SNA can be used not only in organizational contexts but also in friendship networks or school settings. That said, it is difficult to disentangle network-based "power" from status, which could also be indicated by SNA metrics such as centrality. Therefore, SNA may not be an appropriate measurement tool when construct precision is needed.

Finally, a specific way of employing peer-report measures is a *round-robin design*. Participants evaluate themselves and group members regarding specific characteristics, often based on single items (Warner et al., 1979). For example, participants may be asked about each group member's "influence over the group" (Anderson et al., 2008), or "status within the group" (Anderson et al., 2006; de Waal-Andrews et al. 2015; Cheng et al., 2013; McClanahan et al., 2022). In addition to single nomination items, complete peer-report scales can also be employed in round-robin designs to increase reliability and construct coverage.

Organizational Metrics

Power and social rank can be assessed through organizational metrics or self-reports regarding objective organizational positions or resources. For example, Lammers et al. (2010) used the following methods to assess power: Participants indicated (a) their position at work (ranging from non-management to lower-management to middle-management to top-management positions), (b) their number of subordinates, and (c) their position in their organization's power hierarchy on a vertical line (ranging from 0 at the bottom to 100 at the top). These measures were reported to correlate highly (e.g., Lammers et al., 2011). Variants of these measures can also be used to obtain objective scores of power or rank (e.g., number of supervisors; amount of resources at work; e.g., Feenstra et al., 2017; Ibarra, 1993; Mooijman et al., 2015). In general, we argue that this approach does a good job of capturing

face-valid aspects of the construct of power, particularly in items assessing resource control (number of subordinates, financial resources, etc.). Other items—such as management category and vertical position in the hierarchy—again confound power and status, and can only be said to unambiguously measure social rank.

Other researchers asked participants about their control to hire and fire people as an indicator of power measure (Anicich et al., 2016) or combined some of the previous mentioned indices (Elliott & Smith, 2004; Wolf & Fligstein, 1979). Other measures such as job titles or academic degrees have also been used as indicators of status or prestige (Baron & Bielby, 1986; Lamertz & Aquino, 2004). Further, a person's position in an 'organigram' has been used as an indicator of the person's social rank or power (Kim & Guinote, 2022). Future research is necessary to examine more thoroughly how such organizational metrics relate to self- and peer-reports of hierarchy concepts, though on their face these measures appear to capture hierarchy constructs clearly and distinctly. Notably, all these measures assess objective power in formal hierarchies in organizational contexts. They may be less useful for other contexts, such as intimate relationships (e.g., Shaffer & Postlethwaite, 2012).

Physiological Parameters

The hormones *testosterone* and *cortisol* have been intensively studied as physiological markers of hierarchy (Mazur & Booth, 1998), but findings involving testosterone and hierarchy variables are inconsistent (see Grebe et al., 2019; Stanton & Schultheiss, 2009). The link between cortisol and hierarchy variables is not straightforward, either, and may depend on moderators (Sherman & Mehta, 2020). These findings have led researchers to propose the Dual Hormone Hypothesis: Testosterone is only positively associated with hierarchy concepts when it is coupled with low cortisol (Mehta & Josephs, 2010; Mehta & Prasad, 2015). Arguing against this hypothesis, a recent meta-analysis found only a very small effect of the testosterone × cortisol interaction on dominance (Dekkers et al., 2019); other studies suggest

no robust testosterone × cortisol interaction on status or dominance (Grebe et al., 2019; Shields et al., 2021).

Additionally, the two hormones (or their interaction) do not allow for focus on specific hierarchy constructs. All hierarchy variables we examine have been linked, albeit inconsistently, to testosterone and cortisol. Yet, studies often conflate hierarchy variables when analyzing them in relation to hormones (for a similar argument, see Cheng et al., 2018). Perhaps gender is a key moderator, given that gender-specific effects have been reported in some studies (Standon & Schultheiss, 2009). For example, only for men, but not for women, prestige predicted increases in testosterone (Cheng et al., 2018). On the other hand, for women and not men, researchers identified *estradiol* (responsible for regulation of menstrual cycle and reproductive health) as a physiological marker of the implicit power motive (Stanton & Schultheiss, 2007). Finally, the link between hormones (or their interaction) and hierarchy concepts has been found to depend on several additional moderators such as sense of control (Sherman & Mehta, 2020), hierarchy stability (Knight & Mehta, 2017), the presence of a competition or challenge context (Mehta & Josephs, 2010), or type of measurement (Casto et al., 2023).

Considering these mixed findings, we do not support using hormones as a measure or proxy of hierarchy concepts. Robust links between hormones or their interactions and specific hierarchy variables, and key moderating factors, have yet to be established. Further, hormone levels are insufficient to specify standing on precise hierarchy constructs. Though hormones are a very interesting measure in themselves, caution should be used in their interpretation.

Finally, another physiological indicator is the so-called *Positive Affective Contingencies* (PACs; Dufner et al., 2023). Participants are presented with power-related pictures and their positive affective reaction is measured through facial EMG responses (i.e., high zygomaticus and low corrugator activity). Power-motivated people are assumed to derive pleasure from the experience of control situations. Although the PACs is described as a measure of the implicit

power motive, results show that it does not correlate with the PSE but instead with the self-reported power motive (Dufner et al., 2023), an explicit measure. Further, the measure does not clearly discriminate among hierarchy motives (i.e., power, status, dominance).

Language Features

Both paraverbal cues and word choice can indicate people's hierarchical standing. Whereas dominance has been linked to lower *pitch* (e.g., Puts et al., 2006), status and power has been linked to both higher (Ko et al., 2015) and lower pitch (Cheng et al., 2016; Mayew et al. 2013). Thus, more research is needed to examine the specific relations of pitch and hierarchy concepts; that said, pitch is likely an important cue of hierarchy (Aung & Puts, 2020). Further, lower *pitch variability* (i.e., more monotone voice) and higher *variability in loudness* have been linked to power, status, and dominance (Ko et al., 2015; Leongómez et al., 2017).

Verbal features can also be used to infer a speaker's hierarchical standing. Tag questions (e.g., "isn't it"), hedges (e.g., "probably"), intensifiers (e.g., "very"), hesitations (e.g., "um"), and polite forms (e.g., apologies, indirect questions) characterize a so-called *powerless speech style*, and the absence of these forms a *powerful speech style* (Fragale, 2006; Ng & Bradac, 1993). These speech styles may be used to assess a person's power or rank (e.g., low-power people were reported to use more polite forms and hedges than others, Fragale et al., 2012; Morand, 2000). Further, the use of jargon was found to correlate with lower status (Brown et al., 2020). Much of the research on hierarchy and paraverbal features or speech styles studied observer perceptions (see Desmichel & Rucker, 2022; Hall et al., 2005) and thus corresponds more to peer- than to self-report; correlations with self-reported or behavioral indicators of hierarchy concepts have been reported to a lesser degree (e.g., Brown et al., 2020, Fragale et al., 2012). Future research might further pair measures of speech styles with objective indicators of hierarchy constructs to shed additional light on patterns observed.

Finally, power (when defined as ability to influence), coercive dominance, and prestige have been linked to specific *words* in written self-descriptions. For example, the use of positive emotion words (e.g., "friendly," "joy") is positively correlated with prestige; the use of tentative language (e.g., "maybe," "wonder") is negatively correlated with an individual's sense of power (Körner et al., 2023). Coercive dominance showed weaker links to the use of specific words and thus measuring dominance through word choice may not be advisable. Moreover, it has yet to be shown whether these specific links between word choice and hierarchy concepts generalize across written and spoken language, as well as across different sources of language (e.g., emails, essays, text messaging). Another study found that, across different text sources, participants with either higher self-reported or higher objective status and power used fewer first-person singular and more second-person singular and first-person plural pronouns (Kacewicz et al., 2014). Although this study suggests that word choice may be independent of text source because emails, letters, online chats, and conversations were analyzed, the findings have not yet been replicated; further, the construct definitions used in the study are relatively imprecise, so that specific hierarchy concepts cannot be clearly disentangled. Because hierarchy variables differ in their correlations with specific word categories (Körner et al., 2023), more precision is needed to elevate confidence in using word choice as an indicator of any single construct. Still, analyzing the words people use may be a fruitful indicator of a person's power, status, etc., and research in this domain is still developing.

Behavioral and Nonverbal Markers

Nonverbal behaviors have been repeatedly linked to hierarchy concepts, though the links to actual (vs. perceived) power, dominance, etc. have been studied to a lesser extent (Carney, 2020; Hall et al., 2005). Yet, some nonverbal behaviors can be used to operationalize hierarchy concepts.

People high in power, status, dominance, and prestige receive greater *visual attention*; that is, they are gazed at more often and for longer (Foulsham et al., 2010; Vaughn & Waters, 1981). Low-status individuals initiate and maintain less *eye contact* than high-status individuals (see Cheng et al., 2022; Mattan et al., 2017). Further, the *visual dominance ratio* (Dovidio & Ellyson, 1985) may indicate hierarchy: People high in power and status were found to show similar rates of looking while speaking and while listening. By contrast, people low in power and status were found to look more while listening than while speaking (Ellyson et al., 1981).

Another relevant nonverbal behavior is *smiling* (Hall et al., 2005). Though smiling has not been found to correlate with all hierarchy constructs, some do seem related. For example, status and prestige are positively linked to smiling, but dominance is unrelated (Cashdan, 1998; Keltner et al., 1998; Schmid Mast & Hall, 2004; Witkower et al., 2020). Further, upward *head tilt* is positively associated with prestige, whereas downward head tilt is positively associated with dominance (Witkower et al., 2020).

Postural openness is an indicator of hierarchy concepts. Yet, the degree of openness seems to matter: Upright postures have been found to be associated with prestige and expansive poses (both horizontal and vertical expansion) with dominance (Körner & Schütz, 2020; Körner et al., 2022).

Hierarchy has also been linked to cues such as lower *interpersonal distance* in physical interactions, more *interruptions,* and higher *speaking time* (Farley, 2008; Hall et al., 2005; Schmid Mast, 2002). Further, social rank seems to relate positively to nonverbal *disengagement behaviors* in an interaction (e.g., self-grooming, fidgeting with objects) and negatively to engagement behaviors (e.g., laughing, nodding, raising eyebrows; Kraus & Keltner, 2009).

Overall, various nonverbal displays and behaviors can be coded through video recordings or eye-tracking devices from interactions of, for example, romantic couples or

unacquainted people. Yet, with a few exceptions, these nonverbal signals may not discriminate clearly between various hierarchy concepts. Further, research using such behavioral indicators should account for gender differences that may affect cue relationships with hierarchy variables (Brescoll, 2011; Hall et al., 2005; but see Carney, 2020).

Empirical Study

After having argued for particular theoretical meanings of hierarchy constructs and critiquing existing measures with respect to construct validity, we aimed to provide a more formal test of construct validity for a subset of these measures. Testing all measures would be impractical due to cost and respondent demands. By selecting commonly used measures, we sought to assess how well they capture the intended constructs and align with consensus-based theory. We selected scales that have been used often and cover all hierarchy concepts. Therefore, we used general and work-related measures. In other contexts, validated measures do not exist (e.g., friendships, family) or only exist for some, but not all hierarchy concepts (e.g., there are no validated measures targeting prestige in romantic relationships). In addition, most people do some kind of work, highlighting the importance of hierarchy measures at the workplace.

Method

Participants

Participant exclusions and procedure are presented in the OSM. The final sample comprised 778 participants (50% male, 49.4% female; *M* age = 39.80 years, *SD* age = 11.56, Range: 18 to 73). Most participants were from the United Kingdom (85.6%) followed by the United States (7.7%), Australia, Canada, and Ireland (each 1.9%), and New Zealand (0.6%). Most participants were white (84.6%), followed by Asian (5.7%), Black (4.1%), and mixed (3.5%). Sixty percent of participants held a university degree, 15.6% had a higher education entrance qualification, 9.1% a vocational secondary certification, and 8.9% a general

certificate of secondary education as highest education. Full-time employment was reported by 73.9% of the sample, and part-time by 25.4%.

Measures

We administered the following self-report scales (for detailed justification and response scale anchors of all scales, see OSM):

The Personal Sense of Power Scale (PSPS; Anderson et al., 2012) and the Dominance Prestige Scales (DPS; Cheng et al., 2010) were used as both are the most widely used measures of power (as ability to influence) and of coercive dominance and prestige (1172 citations in Google Scholar [October, 2024] for the PSPS; 1071 citations for the DPS). To compare both scales with newer measures that clearly separate motives from felt properties or strategies, we used the Dominance Prestige Questionnaire (DPQ; Körner et al., 2022), the Dominance Prestige Leadership Motive Scales (DoPL; Suessenbach et al., 2018; 6-item forms of the dominance and prestige motive subscales), and the Feeling Powerful and Desiring Power Scales (FPDPS; Murphy et al., 2022). Additionally, we employed several scales identified in our narrative review as conflating various hierarchy concepts or using scale names that do not fit our construct classification (i.e., Achievement Motivation Scale, AMS, Cassidy & Lynn, 1989; Dominance subscale of the California Psychological Inventory from the International Personality Item Pool, IPIP-CPI, Goldberg et al., 2006; Position-Reputation-Information Scale, PRI, Berl et al., 2020). We also selected the dominance subscale (Form A) of the Personality Research Form (PRF; Jackson, 1965) and the Revised Interpersonal Adjectives Scale (IAS-R; Wiggins et al., 1988) as they are well known and widely used dominance measures beyond the social hierarchy literature (Benjamin, 1994; Wiggins & Pincus, 2002; Zhao & Seibert, 2006). Further, we used the Perceived Power and Perceived Status Scales (PPPS; Yu et al., 2019) and the Workplace Status Scales (WSS; Djurdjevic et al., 2017) as both are relatively new measures that, according to our review, clearly measure power and status. Finally, we selected the Subjective Social Status Scale because it is used in

dozens of studies (Cundiff & Matthews, 2017; Hoebel & Lampert, 2020). Although we cannot compute internal consistency and model fit of this single-item measure, we included it to test its convergent and discriminant validity and to explore in exploratory factor analyses whether it loads on the same factor with other scales (or shows cross-loadings). Altogether, we selected these scales, and not others, because they were either often used in previous research or allowed us to contrast scales that, according to our literature review, clearly measure a specific hierarchy variable or clearly conflate hierarchy constructs.

As peer-report scales, we used the New Power Scales (NPS; Hinkin & Schriesheim, 1989), the Interpersonal Power Inventory (IPI; Raven et al., 1998), and the Multidimensional Reputation Scale (MRS; Zinko et al., 2016). We selected these measures, and not others, because the NPS and IPI are intensively used in power research and allowed us to factor analyze various power bases (i.e., studying the factor structure of scales that include power, status, and prestige variables) simultaneously. We included the MRS to analyzes how similar a reputation measure would be to NPS and IPI subscales that we classify as status or prestige. Participants were asked to think about their supervisor using the instructions provided by the original authors. A list of subscales of all self- and peer-report scales appears in Table 2. Note that for the IPI we present the eleven subscales as well as a two-factor solution suggested by the authors (harsh vs. soft power bases; Raven et al., 1998).

Data Analysis Strategy

In a first step, we used a confirmatory approach to test whether the scales would show acceptable reliabilities and model fit. We computed Cronbach's alpha and McDonald's omega total; reliabilities ≥ .70 are considered acceptable (Nunnally & Bernstein, 1994). To assess model fit, we performed a series of confirmatory factor analyses (CFAs) using the robust weighted least squares estimator (WLSMV). This estimator is recommended with ordinal Likert scales (see, e.g., Hussey & Hughes, 2020). For each scale, we designated the residuals of the indicator variables as uncorrelated and the latent factors as correlated (because all

factors are about hierarchy concepts). We chose the following cut-off values: CFI and TLI ≥ .90 (Marsh et al., 2004) and RMSEA ≤ .10 (Browne & Cudeck, 1993). M*plus* 8.8 was used for CFA analyses. Additionally, we tested for convergent and discriminant validity using the average variance extracted (AVE) of each variable (Fornell & Larcker, 1981). Convergent validity is supported if AVE > .50 (Fornell & Larcker, 1981), that is, more than 50% of the variance in the (sub)scale is explained by the indicators of the underlying construct (and not measurement error). Discriminant validity is supported if the square root of the AVE of each variable is higher than the correlations with other variables. We used the zero-order correlations as a benchmark to the square root of the AVE as a less conservative procedure (Voorhees et al., 2016), considering that all scales are about hierarchy. Moreover, as a second test of discriminant validity we compared the heterotrait-monotrait (HTMT2) ratio of correlations with a threshold of .85. The HTMT2 reflects a disattenuated correlation and values > .85 indicate that constructs are not sufficiently distinct (i.e., there could be a problem with discriminant validity; Cheung et al., 2023; Roemer et al., 2021).

In a second step, we computed a series of exploratory factor analyses (EFAs).[9] We grouped the self-report scales by construct (i.e., power, status, dominance, prestige) because a single EFA with all items would result in a global hierarchy factor that limits interpretation of the data. We chose to enter, for example, all power scales into a single EFA because this allowed us to analyze whether the studied scales reflect our distinction of specific hierarchy concepts as outlined in the theory (e.g., resource control, ability to influence, power motive). Also, it allowed us to see whether scales that purportedly measure the same hierarchy concept in fact load on the same factor. Moreover, as some scales conflate hierarchy terms (e.g.,

[9] Note that we did not validate the scales, and thus did not split the sample and use a validation-cross-validation approach; instead, we were interested how well the scale scores perform and in identifying the underlying structures between the items.

coercive dominance and dominance motive in the Dominance Prestige Scales), it allowed us to study whether a scale loads on a single factor or captures another hierarchy concept as well.

First, we determined the number of factors based on statistical considerations (see OSM for the five techniques employed). Subsequently, we computed a series of EFAs using Maximum likelihood estimation. We used a Promax rotation to allow factors to be correlated. Negatively worded items were recoded (i.e., high endorsement reflects high levels on the concept) before conducting EFAs. We considered loadings ≥ .40 meaningful (Stevens, 2009) but also considered somewhat smaller loadings (.30 to .40) relevant if an item differed in its format from most other items in the same EFA (e.g., adjective vs. statements). EFAs were computed using SPSS 25.

Transparency and Openness

Data, materials, and code are available online at https://osf.io/ckg4v/ (Körner et al., 2024b). This study was not preregistered. We report how we determined our sample size, all data exclusions, and all measures in the study.

Results and Discussion

Reliabilities and Model Fit

Descriptive statistics, reliabilities, and model fit of all scales appear in Table 2. All scales/subscales showed acceptable reliabilities (i.e., $\alpha/\omega \geq .70$) except the Legitimacy/Dependence subscale of the Interpersonal Power Inventory ($\alpha/\omega = .67$). Yet, this reliability with solely three items seems not problematic, as shorter scales typically yield lower reliability estimates due to limited item intercorrelations.

Despite high reliabilities for all scales, only one—the Position-Reputation-Information scale—showed acceptable fit on all three indices, probably due to the low number of indicators per factor (West et al., 2012). Notably, all other scales failed to meet our liberal cut-off value for the RMSEA, but we still refrain from evaluating these scales as having a poor model fit and discouraging their use, because most were intensively validated and

developed in a psychometrically sound manner. Further, a universal cut-off value of the RMSEA is debated (Chen et al., 2008) and the RMSEA tends to reject models with low degrees of freedom (which may apply to the Personal Sense of Power Scale, the Workplace Status Scale, and the Interpersonal Adjectives Scale; Kenny et al., 2015). Thus, when assessing model fit, we took into consideration all three fit indices (RMSEA, CFI, TLI).

Most scales showed acceptable CFI and TLI values, but the Sense of Power Scale and the Interpersonal Adjectives Scale had problematic values on not only the RMSEA but also the TLI; further, the Dominance Prestige Scales, the dominance subscales of the PRF and the CPI, and the two-factor solution of the Interpersonal Power Inventory (harsh vs. soft power bases) had problematic CFI and TLI values. Thus, researchers using one of these latter scales should be aware of their problematic fit. When using these scales, we recommend assessing model fit using CFA on one's own sample to bolster confidence in their use.

The Sense of Power Scale and the Interpersonal Adjectives Scale have been used in hundreds of studies, but here, too, different models might be more appropriate. For example, regarding the Sense of Power Scale, the German version has been reported to have satisfactory model fit with six (instead of 8) items (Körner et al., 2022). The Italian Sense of Power Scale supported a two-dimensional model with seven items in total (Paladino et al., 2022). Also, the Spanish Sense of Power Scale distinguished between two factors (Willis et al., 2016), but with eight items. Clearly, cross-cultural measurement invariance or equivalence analyses might be fruitful to further refine the factor structure of the Sense of Power Scale.

The Dominance Prestige Scales and the PRF probably mix different hierarchy variables (the Dominance Prestige Scales have been criticized as conflating dominance-as-strategy with dominance motive; Suessenbach et al., 2019; the PRF dominance subscale has items that tap into leadership, dominance, status, and esteem; Murphy et al., 2022). Thus, researchers using these scales should acknowledge their limitations or rely on subscales that appear less

problematic (e.g., the prestige subscale of the Dominance Prestige Scales). Correlations of all scales/subscales are displayed in Tables S4 and S6.

Convergent and Discriminant Validity

Most scales showed acceptable values for the AVE, supporting convergent validity (see Table S4). The highest values (and thus lowest measurement error) were achieved by the Workplace Status Scale (AVE = .83) and the integrity reputation subscale of the Multidimensional Reputation Scale (AVE = .83). Both subscales of the Dominance Prestige Scales, the dominance subscale of the Dominance Prestige Questionnaire, and the prestige subscale of the Dominance Prestige Leadership Motive Scales failed the cut-off. Also, the dominance subscales of the PRF and the CPI as well as the status motive subscale of the Achievement Motivation scale failed the cut-off. Apparently, several instruments measuring dominance suffer from measurement error, perhaps because the dominance concept is often conflated with other variables. Of the peer-report scales, the legitimacy/position, the legitimacy/dependence, and the harsh power bases subscales of the Interpersonal Power Inventory failed the cut-off of .50.

To test discriminant validity, we first checked whether the square root of the AVE of a specific hierarchy variable was larger than its zero-order correlations. As this was the case with most variables, discriminant validity was supported for several scales (see Table S4). Further, several violations of discriminant validity do not appear concerning as they refer to two scales assessing the same construct (often the scales share some items, e.g., the Personal Sense of Power Scale and the felt power subscale of the Feeling Powerful and Desiring Power Scales). For that reason, only more serious violations indicating potential issues with discriminant validity are discussed. The dominance subscale items of the Dominance Prestige Scales were not clearly distinct from dominance motive items (Dominance Prestige Leadership Motive Scales; Achievement Motivation Scales) and power motive items (Feeling Powerful and Desiring Power Scales). Also, the prestige items of the Dominance Prestige

Scales were not distinct from power items of two scales and status items of one scale (see Table S4). The PRF items were not distinct enough from power motive items of one scale and both subscales of the Achievement Motivation Scales; likewise, the dominance motive of the Achievement Motivation Scale lacked discriminant validity with respect to the PRF items and the power motive (Feeling Powerful and Desiring Power Scales).

Regarding the HTMT2, we found that the following three correlations indicate a lack of discriminant validity (see Table S5): (a) dominance subscale of the Dominance Prestige Scales with the power motive subscale of the Feeling Powerful and Desiring Power Scales, (b) dominance subscale of the Dominance Prestige Scales with the dominance motive of the Dominance Prestige Leadership Motive Scales, and (c) the dominance motive of the Achievement Motivation Scale with the PRF dominance items. Together with our narrative review, we conclude that the dominance subscale of the Dominance Prestige Scales has a strong motive component, and that the PRF is also not distinct enough from a general dominance motive.[10] Altogether, most self-report hierarchy scales showed good evidence of discriminant validity, but the Dominance Prestige Scales, the PRF, and the Achievement Motivation Scales showed some concerning violations.

Only a few violations of discriminant validity were found for the peer-report scales. The only concerning violation was that the items of the personal reward and the referent power subscales of the Interpersonal Power Inventory were not distinct enough from each other (see Table S7).

EFA of Self-Report Scales: Power

We entered items of the Sense of Power Scale, the Feeling Powerful and Desiring Power Scales, the power subscale of the Perceived Power and Perceived Status Scales, and two adjectives of the Position-Reputation-Information scale to the power-related EFA. First,

[10] Note that three additional HTMT2 values were > .85, but not concerning as they were found among scales that assess very similar concepts (e.g., prestige; thus, it may be rather considered as supporting convergent validity).

we found that three factors, which explain 62.42% of variance, should be extracted (see Table S8). The first factor was clearly about power as potential influence, because all Sense of Power items and all felt power items of the Feeling Powerful and Desiring Power Scales loaded on that factor (see Table S9). The second factor reflected the power motive (desired power subscale of the FPDPS). The third factor tapped into power as resource control and had a strong focus on work (e.g., reference to subordinates). All items of the power subscale of the Perceived Power and Perceived Status Scales loaded on that factor. The two adjectives "wealthy" and "powerful" did not show a clear loading pattern. "Wealthy" showed negligible loadings on the power motive and the power-as-resource-control factor; "powerful" loaded slightly on all three factors (with a notable loading only on the power motive). Apparently, using only single adjectives to measure power cannot discriminate between various power conceptualizations. In fact, "powerful" seems to be most strongly related to the power motive, although researchers using such an adjective as a manipulation check after an experimental power induction probably do not want to assess the power motive but felt power. The factor intercorrelations were .35 between the power as potential influence factor and the power motive factor, .40 between the power as potential influence factor and power as resource control factor, and .51 between the power motive factor and the power as resource control factor. Thus, all factors show some overlap, but the Sense of Power Scale, Feeling Powerful and Desiring Power Scales, and Perceived Power Scale can clearly distinguish among various power conceptualizations (though not always consistently with the scale labels).

EFA of Self-Report Scales: Status

The perceived status subscale of the Perceived Power and Perceived Status Scales, the Workplace Status Scale, three items of the Position-Reputation-Information scale, the status subscale of the Achievement Motivation Scale, and the Subjective Social Status Scale are

about status and were jointly analyzed.[11] Three factors were extracted (see Table S8; 64.20% explained variance). Factor 1, on which the perceived status subscale items and the adjectives "reputable" and "respected" loaded, was about social status as esteem and respect in the eyes of observers (see Table S10). Although both the perceived status subscale items and the Workplace Status Scale are about status at work, the Workplace Status Scale items loaded on a second factor together with the Subjective Social Status Scale and the Position-Reputation-Information phrase "have high social status." Thus, the Workplace Status Scale and Subjective Social Status Scale are about social rank. Finally, Factor 3 included all Achievement Motivation Scale items involving the motive for status. Factor 1 correlated more strongly with Factor 2 (r = .58) than with Factor 3 (r = .38), confirming that motives should be distinguished from states. Yet, the rank factor also correlated highly with the status motive, r = .49.

EFA of Self-Report Scales: Prestige

The prestige subscales of the Dominance Prestige Scales, the Dominance Prestige Questionnaire, and the Dominance Prestige Leadership Motive Scales, plus two adjectives of the Position-Reputation-Information scale, were jointly analyzed. Again, three factors were extracted (see Table S8; 57.80% explained variance). The items of the Dominance Prestige Scales and the Dominance Prestige Questionnaire loaded on two factors, with several (low) cross-loadings (see Table S11). As both scales are about a similar prestige concept, this result is not surprising, but we would have expected only one factor to emerge based on our theoretical definition of prestige. Factor 1 reflected expert knowledge, unique abilities, and achievements—characteristics that are typical for prestige (Henrich & Gil-White, 2001). Indeed, the Position-Reputation-Information adjectives "educated" and "intelligent" loaded on that factor. Factor 2 was about respect, admiration, likeability, and identification with the

[11] The Subjective Social Status Scale is a single item and its factor loading may be disproportionately influenced by the multi-item measures. Thus, results regarding this measure should be interpreted with caution.

prestigious person. These are relevant characteristics of prestige (Cheng et al., 2010), but they also show partial overlap with the status construct. From a theoretical viewpoint, and considering the cross-loadings as well as the very high correlation between Factor 1 and 2 (r = .74), we judge that all prestige items of the Dominance Prestige Scales and the Dominance Prestige Questionnaire should be treated as a single latent variable with broad construct coverage (both expertise and admiration may ultimately afford influence, respect, and power). All items of the DoPL subscale on prestige motive loaded on Factor 3. The prestige motive (Factor 3) correlated .32 with Factor 1 and .40 with Factor 2.

EFA of Self-Report Scales: Dominance

We entered the dominance subscales of the Dominance Prestige Scales, the Dominance Prestige Questionnaire, the Achievement Motivation Scale, the CPI, the PRF, and the Dominance Prestige Leadership Motive Scales, as well as the Interpersonal Adjectives Scale, into a single EFA. Three out of five factor retention methods suggested that six factors should be extracted (see Table S8). The EFA with six predefined factors explained 58.70% of variance. Only a few items showed relevant cross-loadings, but for many scales not all items loaded on the same factor. Factor 1 was about the dominance concept of the dominance-prestige framework (Cheng et al., 2010) because several of the DPS and DPQ items loaded on that factor (see Table S12). Moreover, the IAS-R adjectives “forceful” and “domineering,” as well as the PRF items “I try to get others under my influence instead of allowing them to control me” and “If I try a little, I can wrap most people around my finger,” loaded on that factor. Thus, Factor 1 presents dominance in its antisocial, coercive, and aggressive form.

Note that the dominance motive items of the DoPL also loaded on that factor. This overlap makes sense, as these items aim to assess the dominance motive in line with the coercive dominance concept of the dominance-prestige framework. Moreover, some of the DPS items have been criticized for not distinguishing between dominance motive and dominance as strategy or self-concept aspect (Körner et al., 2023). The two PRF items that

loaded on Factor 1 also tap into motives. Thus, though Factor 1 appears to capture dominance as coercive strategy, the EFA failed to distinguish between strategy/self-concept and motives. In this case, we advise using the DPQ to assess coercive dominance and the DoPL to assess the dominance motive because both scales were developed to clearly distinguish motives from strategy/stable self-perceptions. That is, the theoretical argumentation to distinguish between dominance motives and dominance as strategy/self-concept should outweigh the statistical result.

Factor 2 contained all AMS items (except one item with a cross-loading), most PRF items, and two items of the DPS. Like with Factor 1, both items treating dominance as a trait and items treating dominance as a motive loaded on Factor 2, which reflected authority, control, and leadership. This factor is consistent with research on dominance as personality trait, but may conflate the construct with leadership. In addition, the EFA results support the notion that the dominance subscale of the AMS cannot be seen as a substitute for dominance measures of the dominance prestige framework because the AMS items did not load on a common factor with the DPS, DPQ, and DoPL.

The remaining factors are more straightforward. Factor 3, containing most of the IAS-R items, represents dominance as personality trait characterized by agentic, assertive, and confident behavior (Hall et al., 2005; Maslow et al., 1939). Factor 4 consisted of several IPIP-CPI items. These are about challenging other people and a confrontational attitude. Factor 5 included some DPQ items that are about intimidation. Finally, Factor 6 was indicated by only two items, both IPIP-CPI items about outdoing others.

Factor intercorrelations are displayed in Table S13 and discussed in the OSM. In either case, the current results show that dominance is a broad construct with different meanings used by different groups of researchers. Therefore, in empirical studies, we recommend that researchers take care to specify their definition and theory of dominance, and to justify the suitability of the chosen dominance scale, to increase clarity.

EFA of Peer-Report Scales: Power

We entered the reward and coercive power subscales of the New Power Scales and the Interpersonal Power Inventory in a single EFA because reward and punishment are central to power as resource control (Keltner et al., 2003). Most factor retention methods suggested extracting five factors (see Table S14). The five-factor EFA explained 71.76% of variance. Factor 1 was about impersonal reward and impersonal coercion (IPI; see Table S15). Factor 2 reflected coercive power, specifically the NPS. Factor 3 was about personal reward, though two of three personal coercion items also loaded on that factor (one item had a high cross-loading). Factor 4 was about reward power of the NPS. Factor 5 contained one impersonal item and two personal coercion items. Interestingly, the NPS items did not load on a factor together with the IPI items (though this may partly reflect different scale instructions and response options). Also, within the IPI, reward versus coercive power were less clearly differentiated than were personal (i.e., experience of actual supervisor's behavior) and impersonal (i.e., potential rewards and threats by the supervisor; Raven et al., 1998) power. Factor intercorrelations appear in Table S16. In sum, researchers should be aware that the reward and coercive subscales of the NPS are somewhat different from the corresponding IPI subscales.

EFA of Peer-Report Scales: Status-Related Scales

We considered legitimate, expert, referent, and information power to represent some form of status, so we entered the corresponding subscales of the New Power Scale and the Interpersonal Power Inventory as well as the Multidimensional Reputation Scale in a single EFA. Five factors were extracted (see Table S14). The EFA explained 60.03% of variance, but only partially supported our theoretical expectations of five different factors (legitimate, expert, referent, information, reputation).

Factor 1 was about reputation, given that all items of all MRS subscales loaded on that factor (though two task reputation items showed non-relevant loadings; see Table S17). Factor

2 reflected three different sources of status from the NPS measure (legitimate, expert, and referent). Factor 3 contained the expert, referent, information, legitimacy/position, and legitimacy/dependency items of the IPI. In sum, the first three factors distinguished primarily between the original scales, not the constructs that the scales purport to measure. Researchers should be aware that particular constructs may be measured differently depending on which scale is used, and select accordingly.

The items of the legitimacy/reciprocity and the legitimacy/equity subscales loaded on Factor 4. This factor is about the obligation to comply because of past courtesy by the supervisor and past failures by the subordinate. Thus, this factor may reflect some ethical drivers of why people obey. Finally, Factor 5 contained most of the expert items of the NPS and the IPI and the task reputation items of the MRS. Thus, Factor 5 is about expertise only and may be better understood as some form of prestige (superior knowledge and skills). This factor supports the notion that prestige grounded in expertise is different from status-related measures (e.g., referent subscales). Factor intercorrelations appear in Table S18.

Summary

Altogether, all scales for which we collected data showed acceptable to excellent reliabilities. Several scales also showed good model fit in CFAs, though some scales did not meet fit index cut-offs. This problem is not unique to hierarchy scales, but has also been reported with commonly-used measures of, for example, personality, self-monitoring, and right-wing authoritarianism (Hussey & Hughes, 2020). Most scales also showed good evidence of convergent and discriminant validity. Yet, some dominance scales exhibited violations of discriminant validity indicating that these scales do not clearly distinguish between agentic or coercive dominance and the dominance (or power) motive. Therefore, more research is needed to clarify the different aspects that the dominance concept and various scales encompass. Additionally, new dominance scales (particularly on agentic dominance without motive-related content) should be developed, ideally guided by

consensual dominance definitions as proposed in this work, to achieve good content and structural validity.

The EFAs shed additional light on what latent variables are behind the scale items: We found strong support for our theoretical distinctions among various hierarchy concepts (in particular for power and status, but also for prestige). The dominance scales seemed to have the broadest coverage of the underlying construct (although note that we also assigned the largest number of items/scales to the dominance EFA). Dominance seems to have at least the two proposed, conceptually distinct forms (coercive dominance; agentic dominance), but additional conceptualizations become evident in the scale analyses. Further, the EFAs on peer-report scales also clearly distinguished among hierarchy concepts (and different scales). Notably, in all six EFAs, surprisingly few items showed double loadings and could not be clearly assigned to a specific factor. Thus, it seems that the various hierarchy concepts can be empirically distinguished. In sum, the results may help researchers to reach a better understanding of similarities and differences among various scales that purportedly assess the same hierarchy concept.

General Discussion

In this review, we have provided a comprehensive overview of hierarchy scales. First, we defined several hierarchy concepts to provide conceptual clarity at the construct level. Then, based on a systematic literature search, we presented 67 self- and peer-report scales targeting power, dominance, status, and prestige. In addition, we discussed alternative measurement approaches for hierarchy concepts (i.e., projective and indirect tests, pictorial approaches, sociometric assessments, organizational metrics, physiological indicators, language features, behavior and nonverbals). Finally, for a subset of the hierarchy scales that are often used in research and that apply to broad contexts (general and work measures), we conducted reliability and factor analyses to explore psychometric properties in more depth.

Summary of Findings

Achieving Conceptual Consensus

Using several theoretical or empirical frameworks (Anderson & Brion, 2014; Blader & Chen, 2012, 2014; Cheng & Tracy, 2014; French & Raven, 1959; Fast et al., 2012; Fast & Overbeck, 2022; Fragale et al., 2011; Galinsky et al., 2015; Jiménez & Mesoudi, 2019; Keltner et al., 2003; Magee & Galinsky, 2008; Maner, 2017; Mattan et al., 2017; Sturm & Antonakis, 2015; Torelli et al., 2020), we formulated definitions of core hierarchy variables to capture prevailing consensus regarding the best definition for each hierarchy concept and to draw clear boundaries between distinct concepts (see Figure 1, Table S1). Importantly, the empirical study provided strong evidence for these distinctions among the hierarchy concepts. Power scales are about (a) the ability to influence, or (b) resource control, or (c) a broad power motive. Status scales are about (a) respect and esteem in the eyes of others, or (b) social rank, or (c) the status motive. The factor analytic results supported a distinction between (a) prestige as strategy and (b) the prestige motive. For dominance, the factor analytic pattern was not as clear as with the other scales. Nevertheless, we were able to identify commonalities among the factors to somewhat support the differentiation among (a) coercive dominance, (b) agentic dominance, and (c) the dominance motive. Note that the dominance scales were also often confounded with other constructs, which is why the EFA on the dominance scales produced more factors than our theory-based construct differentiation.

In Figure 4, we present our Integrative Model of Social Hierarchy Concepts along with scales (or subscales) that clearly map onto specific hierarchy concepts, based on the results of our literature review and empirical study. We included only scales that received a score of greater than 5 according to our evaluation criteria. Measures that tap into very specific concepts were not included in the figure (e.g., lay theories of power, fearless-dominance). Researchers can use the information from Figure 4 to select relatively broad and psychometrically sound scales that assess the corresponding hierarchy concept(s). Yet, even

for these scales with good construct match and coverage, the evaluation criteria (Table 1, S3), our discussion in the systematic literature search, and (if available) the results of our empirical study should be used as additional guidance on advantages and disadvantages. In any case, we believe that consensus in hierarchy research will increase if researchers use these scales (or others discussed in the systematic literature review but coupled with a thorough examination of construct fit) to generate new insights into the individual, dyadic, and group processes surrounding social hierarchy.

Further, our review and empirical analysis highlight some common measurement practices that should be changed in hierarchy research (see also section on Motives, below). We highlight only two serious instances, though several other measures have issues with respect to psychometrics, construct conflation, or construct coverage in the Results sections. First, researchers often use the Achievement Motivation Scales (Cassidy & Lynn, 1989) to assess dominance and prestige (e.g., Case et al., 2018; Ronay et al., 2024). Yet, the dominance subscale not only mixes motive with trait content, but also assesses power and leadership (we termed the subscale *power motive*). Further, the status subscale is rather about status as respect and esteem, not prestige. Second, the dominance scale of the Personality Research Form (Jackson, 1965), though often used in hierarchy research (e.g., Slabbinck et al., 2013; Stanton & Schultheiss, 2007), not only conflates motive and property content (for a similar argument, see Murphy et al., 2022), but also showed issues with respect to convergent and discriminant validity, no convincing model fit, and no clear loading pattern in the dominance EFA. We hope our review will provide guidance for scale selection, thus improving measurement practices (see also Table 3 for specific recommendations).

Moreover, in the theory section, we discussed influence, power, status (as rank and as respect and esteem), dominance (as strategy and as trait), and prestige, but we assigned the scales to the latter four overarching constructs. We took this action because measures tapping into one's ability to *influence* are usually termed as experienced, relationship, or sense of

power (e.g., Anderson et al., 2012; Farrell et al., 2015; Körner & Schütz, 2024; Murphy et al., 2022; Overall et al., 2022). Nonetheless, in contrast to the two dominance subforms that are both antecedents of resource control and status, and the two status subforms that are both bases of hierarchy, what we have categorized as two power forms appear at different stages of our model (see Figure 4). Resource control was conceived as a basis of hierarchy (Magee & Galinsky, 2008; Sturm & Antonakis, 2015), but ability to influence as an outcome. The distinction is even more important as (ability to) influence can also arise from social rank and from respect and esteem (Fast & Overbeck, 2022). Thus, we argue that the term *power* can be misleading when applied to measures of the ability to influence. Researchers using ability-to-influence measures should define what they mean when using the term power and acknowledge that influence can also arise from factors other than resource control.

Motives

The previous discussion focused primarily on the social properties, but motives are just as important as the properties. With indirect tests, we noted that researchers often liberally use the terms power, status, dominance, and prestige to describe the measured construct or item content (e.g., Schmalt, 1987; Slabbinck et al., 2011). This also applies to self-report instruments (e.g., Schönbrodt et al., 2009). This practice is problematic, because hierarchy concepts can largely differ in their correlates and have distinct meanings (Blader & Chen, 2012; Cheng et al., 2010; Hays, 2013). Moreover, for each overarching construct (power, status, dominance, prestige), the motive scales loaded on a single factor in the empirical study. Although this result supports the distinction between traits and motives (Winter et al., 1998), it also suggests that the motives are not as fine-tuned as the traits (e.g., status motive measures did not clearly distinguish between the wish to be respected and admired and the wish to have a high societal position). Yet, it seems highly likely that some people aim at achieving rank through coercion whereas others wish to be an assertive and agentic person. Some people may want to be respected and esteemed whereas others simply want to possess a

high rank in a specific hierarchy. The importance of distinguishing between various hierarchy motives is also partly mirrored in the lay beliefs of power concept (Belmi & Laurin, 2016; ten Brinke & Keltner, 2022): Although lay beliefs do not refer to motives specifically, it is likely that people with a coercive lay belief (i.e., power is gained and maintained through selfish and antisocial actions) show different hierarchy motives (e.g., coercive dominance striving) than people with a collaborative lay belief of power (i.e., power is gained and maintained through concern for others and social responsibility; which does not fit to coercive dominance striving but may, e.g., align with wishing to be high on agentic dominance or on prestige). Further research is needed on the motive scales to analyze in more detail which aspect of the corresponding hierarchy concept they assess (i.e., ability to influence or resource control; respect and esteem or social rank; personality or coercive dominance; see Figure S1; see Narh et al., 2022). This seems even more warranted as we noted that authors of motive scales often focus only on the desire/wish/need component but do not clearly define what power, status, etc. are. In any case, we believe that the common practice in motive research of assessing a single power motive that captures various social hierarchy concepts is problematic, because different hierarchy motives have distinct correlates and consequences (Suessenbach et al., 2019). Thus, a modest degree of construct proliferation in this domain may help (not hurt) to resolve heterogeneous findings and may enable better integration of hierarchy motives with their corresponding social properties.

Context-Specificity of Scales

Overall, we found a very large number of self- and peer-report scales that aim to assess hierarchy variables. Most scales address power or dominance. Within the power scales, several scales target the two contexts of romance and work. This fact highlights the need to carefully select a scale that fits with one's research purpose. In rating important dimensions for each scale, we hope to provide some guidance on that issue. A few dominance scales focus on romance, a few status scales on work contexts. For prestige, only general measures

exist (which may be because prestige, as a construct, has the shortest research tradition). Therefore, it would be fruitful to assess dominance, status, and prestige not only in general ways, but also through context-specific measures. For example, new scale development approaches targeting work-related dominance or prestige, or romance-related status and prestige, would be helpful.

In addition, we found only two validated measures of status in the school context. In fact, only 5% of the scales that we had reviewed relied on children as participants. Scales do exist in this domain, but school-related hierarchy measures were often not psychometrically sound or consisted of only one or two items (i.e., mostly nomination procedures). As social hierarchy is relevant in the school context (Coie et al., 1982), we recommend that effort be put toward developing school-related multi-item measures that target every hierarchy variable. This would allow better comparability of findings from school contexts with those from other contexts. Moreover, measures pertaining to family or friendship may also be developed to capture hierarchy more fully in all social relations.

Implications of the Empirical Study's Results

Our original empirical study showed that all 16 scales that were analyzed had good reliability. Still, when assessing model fit, we found some evidence of hidden invalidity (Hussey & Hughes, 2020): Only a subset of the scales showed good model fit in CFAs. Some scales even showed violations of convergent and/or discriminant validity. These problems may also be present in the 51 scales whose psychometric properties we did not test (for economic reasons). Future research is needed to provide additional evidence on structural validity and item characteristics (specifically for the Achievement Motivation Scales, the Sense of Power Scale, the Interpersonal Adjectives Scales, the Dominance Prestige Scales, the dominance subscales of the PRF and the IPIP-CPI, and the soft vs. harsh power bases distinction of the Interpersonal Power Inventory). Still, we note that hierarchy scales often show impressive evidence on nomological and criterion validity because, in line with theory,

associations with other psychological constructs and objective criteria are reported in almost all scale validation articles.

Nevertheless, the focus should not be solely on nomological validity, but also on structural validity (i.e., model fit), where many hierarchy scales seem to have some issues. This is important; poor psychometric properties can erode trust in findings derived from the external validation phase of measure development (i.e., convergent, divergent, criterion validity tests; Hussey & Hughes, 2020). Furthermore, our EFAs provide information on similarities and differences among scales. For example, the Interpersonal Power Inventory and the New Power Scales seem not to be potential substitutes for each other, but to differ with respect to their factor structure. Furthermore, the Achievement Motivation Scale seems to assess a different dominance concept than do the Dominance Prestige Scales and the Dominance Prestige Questionnaire. Finally, the use of broad terms such as "wealthy" or "powerful" does not seem useful to clearly discriminate among hierarchy concepts.

Limitations and Future Research Directions

To provide readers with a comprehensive guide to hierarchy scales, we present several criteria in Table 1. This information was mainly based on the original articles presenting the scale development work, but additional publications may have subsequently examined psychometric properties of these scales. As it was not feasible for us to review all subsequent works citing these instruments, we cannot completely rule out that performance on certain criteria may change due to other findings. To tackle this issue to some degree, we created a website with the hierarchy scales overview (https://socialhierarchyscales.github.io/). Researchers can contact us to add additional information on their scales or to request the inclusion of new scales. This has also the advantage of providing an updated overview in the future.

Moreover, in our empirical study we focused on validated self- and peer-report scales. Due to the large number of administered scales, we were unable to collect data on other

measurement techniques (e.g., indirect tests, organizational metrics). Therefore, we cannot say on which hierarchy concepts (measured with scales) other hierarchy indicators map. Similarly, we used general and work-related measures but could not collect data on measures targeting other contexts (e.g., romantic relationships) due to concerns with survey completion time.

Moreover, we were only able to identify scales that were published in English and German. Thus, some hierarchy scales published in other languages may be frequently used but not listed in this review due to language barriers. This issue pertains to several reviews on measurement tools more broadly (e.g., emotions, Weidman et al., 2017; forgiveness, Fernández-Capo et al., 2017) as well as hierarchy specifically (Cheng et al., 2014; Galinsky et al., 2015). Yet, as we identified several English publications that focused on validating one of the 67 original scales for other languages than English (see Languages column in Table 1), the findings may only partly be limited by language biases. Moreover, some scales had been developed for other languages (e.g., German, Chinese) but were published in English and thus accessible to us. Still, scales with languages from collectivistic countries are underrepresented.

Finally, we provided a thorough definition and categorization of hierarchy variables. The distinction combined several theoretical approaches to hierarchy research (e.g., Anderson et al., 2015; Berger et al., 1972; Blader & Chen, 2014; Cheng et al., 2010; Fast & Overbeck, 2022; Keltner et al., 2003; Magee & Galinsky, 2008). Nevertheless, our analysis excludes other research traditions where, for example, researchers may describe dominance as social rank or resource control. We acknowledge the lack of universal consensus on hierarchy terms, but we also hope to provide increased conceptual clarity in the jingle-jangle of hierarchy terms in our disciplinary space.

We list several scales that researchers can use to assess hierarchy concepts. Often, several different scales must be administered to assess various concepts. Developing a

modular scale that can be adapted with respect to hierarchy construct, reference group, and context would be a fruitful avenue. For example, the items may be similar in their syntax, but specific words can be changed to assess different hierarchy concepts. Pronouns and instructions can be changed to refer to different reference groups (e.g., myself, teacher) and contexts (e.g., work, romance). Such a scale (when thoroughly developed and validated) would provide a clear and simple assessment of hierarchy concepts as only a single scale need be used.

In addition, such a scale may also vary level of abstraction by using different instructions or words: Past research used different instructions to distinguish between power in a specific situation, in a dyadic relationship, group context, or as generalized self-evaluation across several relationships and situations (see Anderson et al., 2012). The same abstraction levels could also be used for status, dominance, and prestige, and for even more abstract comparisons, for example, to compare one's social rank not only within a nation but also with people from other nations. Similarly, at a national level, measures could be adapted to capture cross-national comparisons of social hierarchy perceptions. For instance, one could ask individuals to evaluate their nation compared with others on dimensions such as economic power or cultural influence. This could offer insights into how collective-level hierarchy perceptions predict national identity or global cooperation, thereby enriching our understanding of how hierarchy constructs operate beyond dyadic and self-focused contexts. Finally, future research might examine whether hierarchy constructs are equally predictive of outcomes at individual, organizational, and national levels, or whether their meaning shifts depending on the abstraction level.

Conclusions

People have probably always been interested in social hierarchies—in ways in which people influence others, dominate subordinates or romantic partners, or gain status by superior knowledge and expertise. Therefore, researchers have developed a host of self- and

peer-report scales to assess individuals' power, status, dominance, and prestige. We provide a thorough overview and examination of hierarchy scales. In doing so, we hope to help researchers who study social hierarchy to achieve greater conceptual clarity and to select psychometric scales according to their respective goals. We also hope to decrease conceptual overlap and confusion in hierarchy research: With greater consensus on which scale measures what hierarchy concept, comparability of study findings increases and accumulation of findings is supported. Overall, hierarchy research is flourishing and the present review may increase trust and importance in hierarchy research by providing consensus definitions of core hierarchy variables, highlighting measurement quality of research tools, providing support for comparability between studies, and stimulating new research ideas on the development of hierarchy instruments.

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*References marked with an asterisk indicate studies included in the scales overview.

**References marked with two asterisks indicate studies of major relevance to the additional hierarchy measurement approaches.

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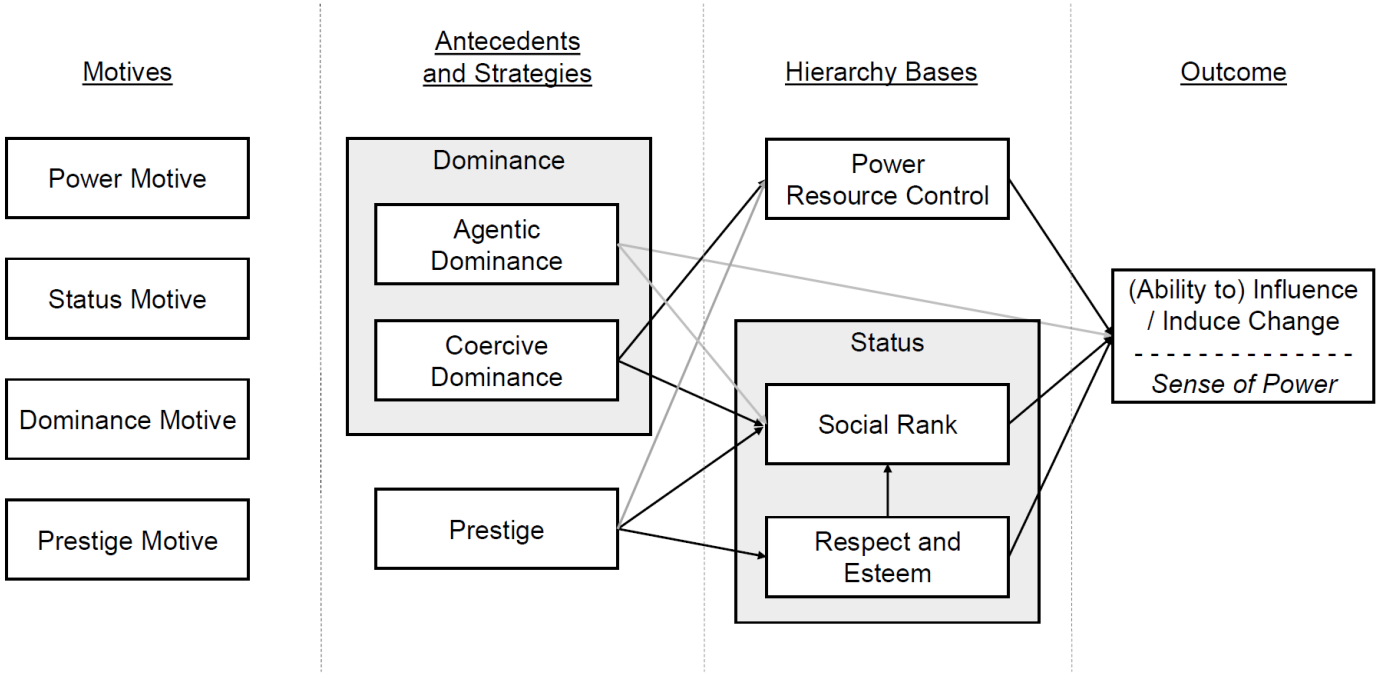
Figure 1

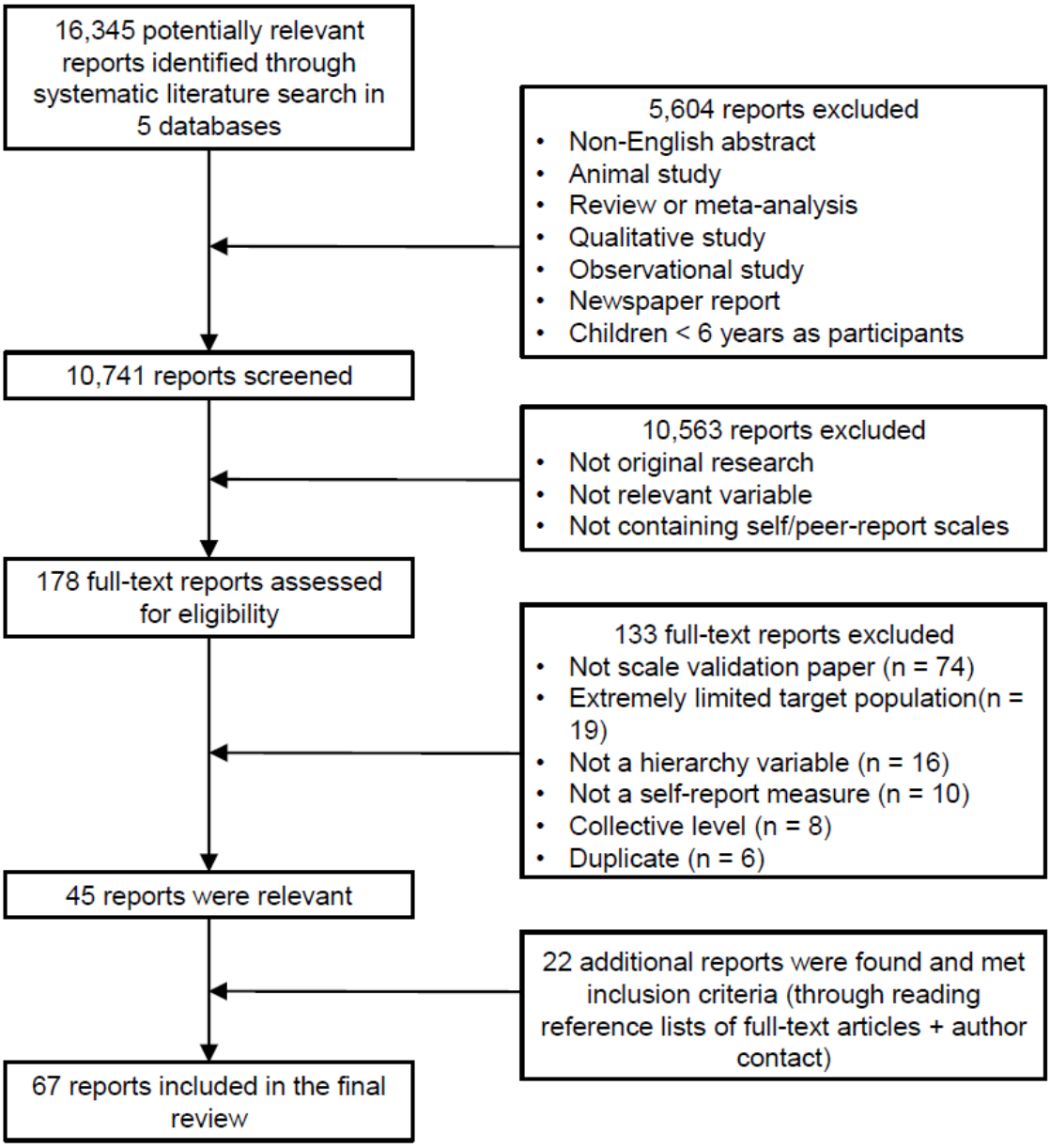
Integrative Model of Social Hierarchy Concepts



Note. Grey arrows reflect weaker associations than black arrows. Agentic dominance is conceived as an antecedent whereas coercive dominance and prestige are conceived as antecedents and strategies.

Figure 2

PRISMA Flowchart of Literature



Note. Abstracts and titles were deduplicated at the outset of the process.

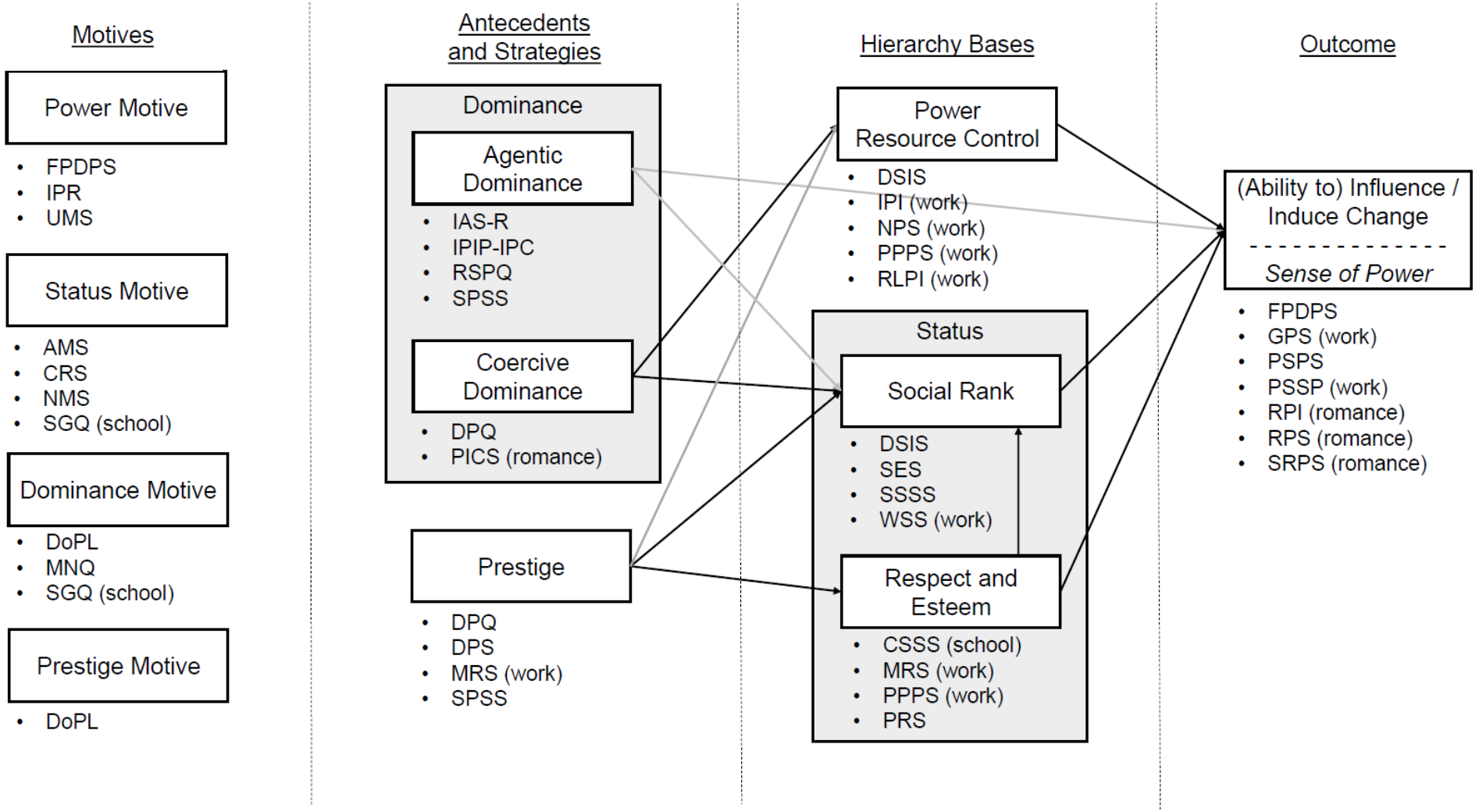
Figure 3

Overview of Measurement Approaches of Hierarchy Concepts (Along with Major Advantages and Disadvantages)

	Psychometric Scales	Projective and Indirect Tests	Pictorial Approaches	Sociometric Assessments	Organizational Metrics	Physiological Parameters	Language Features	Behavior and Nonverbals
	• Self-reports • Peer-reports	• TAT / Picture Story Exercise / Operant Motive Test • IAT • Multi-Motive-Grid • Conditional Reasoning Test	• Self-Assessment Manikin Scale • Pyramid hierarchies or size of central figure surrounded by others • Spatial Power Motivation Scale	• Nominations (to compute liking, social preference; round-robin designs) • Social network analysis	• Managerial position • Number of subordinates • Titles • Hire-and-fire ability • Organigram	• Hormones (testosterone, cortisol, estradiol) • Positive Affective Contingencies	• Paraverbal features (pitch, variablity in loudness and pitch) • Powerful vs. powerless speech style • Word use	• Visual attention • Smiling • Head tilt • Postural openness • Interruptions • Speaking time • Interpersonal distance • Disengagement behavior
Advantages	• Allow clearest assessment of social hierarchy variables • Economic • Probably best psychometric properties	• Measurement of non-conscious processes • Predict spontaneous, non-deliberative behavior	• Culture-fair and non-verbal • Suitable for children • Quick and easy assessment	• Rich data of social interactions and peer insights • Quantifiable metrics (e.g., centrality)	• Objective assessment • Relatively easy accessible • Historical records also possible	• Objective assessment • Non-conscious measurement of automatic reactions	• Non-invasive and cost-effective • Accessible from various sources (e.g., data bases)	• Unconscious indicators • Easily observable
Disadvantages	• Some scales mix hierarchy variables • Social desirability, response tendencies, etc.	• Debate about psychometric properties and complex interpretation • No clear assessment of specific verticality	• Limited construct coverage • Interpretation variability and limited specification of context	• Only possible in group settings • Social desirability, response tendencies, etc.	• Only possible in organizational contexts • Do not fully capture behavior, thoughts, and feelings • Overemphasis on formal roles	• Cost-intensive • No clear assessment of specific verticality concepts	• Differences between spoken and written language • Differences across language sources	• Resource-intensive (e.g., video recording, eye-tracker) • Cultural and gender differences

Figure 4

Integrative Model of Social Hierarchy Concepts With Scales (see Note) Assigned to Specific Concepts



Note. Power Motive: FPDPS = Feeling Powerful and Desiring Power Scales – desiring power (Murphy et al., 2022). IPR = Index of Personal Reactions – power (Bennett, 1988). UMS = Unified Motive Scales – power (Schönbrodt et al., 2012).

Status Motive: AMS = Achievement Motivation Scale – status (Cassidy & Lynn, 1989). CRS = Concern for Reputation Scale (de Cremer & Tyler, 2005). NMS = New Machiavellianism Scale – need for status (Dahling et al., 2009). SCQ = Social Goal Questionnaire – status (Jarvinen & Nicholls, 1996).
Dominance Motive: DoPL = Dominance-Prestige-Leadership Scale – dominance (Suessenbach et al., 2019). MNQ = Manifest Needs Questionnaire – dominance (Steers & Braunstein, 1976). SCQ = Social Goal Questionnaire – dominance (Jarvinen & Nicholls, 1996).
Prestige Motive: DoPL = Dominance-Prestige-Leadership Scale – prestige (Suessenbach et al., 2019).
Agentic Dominance: IAS-R = Revised Interpersonal Adjective Scales (Wiggins et al., 1988). IPIP-IPC = International Personality Item Pool – Assured-dominant subscale from IPC (Markey & Markey, 2009). RSPQ = Rank Style with Peers Questionnaire (Zuroff et al., 2010). SPSS = Self-Perceived Social Status Scale – status (Buttermore, 2004).
Coercive dominance: Dominance Prestige Questionnaire—dominance (Körner et al., 2023). PICS = Power Imbalance in Couples Scale – controlling subscales (Neilands et al., 2019).
Prestige: Dominance Prestige Questionnaire – prestige (Körner et al., 2023). DPS = Dominance-Prestige Scales – prestige (Cheng et al., 2010). MRS = Multidimensional Reputation Scale – task reputation (Zinko et al., 2016). SPSS = Self-Perceived Social Status Scale – prestige (Buttermore, 2004).
Resource control: DSIS = Differential Status Identity Scale (Thompson & Subich, 2006). IPI = Interpersonal Power Inventory – reward, coercive (Raven et al., 1998). NPS = New Power Scales – reward, coercive (Hinkin & Schriesheim, 1989). PPPS = Perceived Power and Perceived Status Scales – power (Yu et al., 2019). RLPI = Rahim Leader Power Inventor (Rahim, 1988)
Social rank: DSIS = Differential Status Identity Scale (Thompson & Subich, 2006). SES = Socioeconomic status. SSSS = MacArthur Subjective Social Status Scale (and variants; Adler et al., 2000). WSS = Workplace Status Scale (Djurdjevic et al., 2017).
Respect & esteem: CSSS = Children Social Status Scale (Rodkin et al., 2013). MRS = Multidimensional Reputation Scale – overall score; social and integrity reputation (Zinko et al., 2016). PPPS = Perceived Power and Perceived Status Scales – status (Yu et al., 2019). PRIS = Position-Reputation-Information Scale – reputation (Berl et al., 2020).
Ability to influence: FPDPS = Feeling Powerful and Desiring Power Scales – feeling powerful (Murphy et al., 2022). GPS = Global Power Scale (Nesler et al., 1999). PSPS = Personal Sense of Power Scale (Anderson et al., 2012). PSSP = Perceived Supervisor Social Power (Chénard-Poirier et al., 2021). RPI = Relationship Power Inventory (Farrell et al., 2015). RPS = Relationship Power Scale (Wang et al., 2007). SRPS = Sexual Relationship Power Scale –decision-making dominance (Pulerwitz et al., 2000; but see McMahon et al., 2015).

Table 1

Characteristics of Scales (Complete List Available on Website and OSM)

Construct (according to our definition)	Instrument [Context]	Authors' definition of measured construct	Measured variable and factors	Items	Reliability		Validity			Notes	Languages	Score (out of 8; based on +)
			Labeled-construct content validity | Consensus content validity	Availability	Internal consis-tency	Sta-bility	Item gene-ration	Formal analy-sis	Relation with other variables			
Power (as potential influence)	Personal Sense of Power Scale [general & relationship-specific] (Anderson et al., 2012)	Perception of one's ability to influence another person or other people	+ | + ability to influence	+ 8 (e.g., "In my relationships with others… My wishes do not carry much weight.")	+	+	+	+	+	Measurement invariant across sex	EN, GE, IT, SP	8.0
Power (as potential influence)	Feeling Powerful and Desiring Power Scales [general] (Murphy et al., 2022)	a perception of one's capacity to influence others desire for greater capacity to influence others	+ | + ability to influence power motive	+ 6 + 6 (e.g., "I like to tell people what they should do")	+	-	+	+	+		EN	7.0
Power (as potential influence)	Relationship Power Inventory [romantic partner] (Farrell et al., 2015)	the ability or capacity to change the partner's thoughts, feelings, and/or behavior so they align with one's own desired preferences, along with the ability or capacity to resist influence attempts imposed by the partner	+ | + ability to influence 1) Self Power (Outcome) 2) Self Power (Process) 3) Other Power (Outcome) 4) Other Power (Process)	+ 20 (e.g., "I have more say than my partner does when we make decision in this domain")	+	+	+	+	+	Overall version and versions for 10 domains (e.g., future plans)	EN, SP	8.0
Power/Dominance (see fourth column)	Power Imbalance in Couples Scale [male same-sex couples] (Neilands et al., 2019)	person's ability to act or make decisions relative to their partner and to influence (as well as	- | + coercive dominance (except subscale 2) 1) Overtly controlling partner	+ 62 (e.g., "My partner is controlling")	+	-	+	+	+		EN	6.0

Construct (according to our definition)	Instrument [Context]	Authors' definition of measured construct	Measured variable and factors	Items	Reliability		Validity			Notes	Languages	Score (out of 8; based on +)
			Labeled-construct content validity | Consensus content validity	Availability	Internal consis-tency	Sta-bility	Item gene-ration	Formal analy-sis	Relation with other variables			
		resist the influence of) their partner	2) Supportive partner 3) Conflict avoidant actor 4) Overtly controlling actor									
Power (as potential influence)	Relationship Power Scale [non-single female adolescents] (Wang et al., 2007)	ability of female adolescents to control the behaviors of their steady boyfriends	+ | +/- ability to influence	+ 7 (e.g., "I can persuade my boyfriend not to do the things I don't want him to do")	+	+/-	+	+	+/-	Developed with Taiwanese pupil	EN, TU	6.5
Power (as potential influence)	Sexual Relationship Power Scale [HIV research] (Pulerwitz et al., 2000)	decision-making dominance, the ability to engage in behaviors against a partner's wishes, the ability to control a partner's actions	+ | +/- coercive dominance and other (hierarchy) variables (subscale 1); ability to influence (subscale 2) 1) Relationship control 2) Decision-making dominance	+ 23 (e.g., "Most of the time, we do what my partner wants to do")	+	-	+	+	+	Modified version exists without condom use items	EN, AF, SP	6.5
Power (as potential influence)	Perceived Supervisor Social Power [supervisor] (Chénard-Poirier et al., 2021)	the global perception by a follower of his/her supervisor potential to influence important organizational actors and the organizational decision-making process	+ | + ability to influence	+ 5 (e.g., "My supervisor's decisions affect a lot of people in this company")	+	-	+	+	+	Measurement invariant across 3 countries	EN, FR, RO	7.0

Construct (according to our definition)	Instrument [Context]	Authors' definition of measured construct	Measured variable and factors	Items	Reliability		Validity			Notes	Languages	Score (out of 8; based on +)
			Labeled-construct content validity | Consensus content validity	Availability	Internal consis-tency	Sta-bility	Item gene-ration	Formal analy-sis	Relation with other variables			
Power (resource control)	New Power Scales [supervisor] (Hinkin & Schriesheim, 1989)	ability to administer tangible ("things") or intangible ("feelings") outcomes for another	+ | +/- resource control but also several hierarchy variables 1) Reward power 2) Coercive power 3) Legitimate power 4) Expert power 5) Referent power	+ 20 (e.g., "My supervisor can … influence my getting a pay raise" for reward)	+	-	+	+	+		EN	6.5
Power (resource control)	Interpersonal Power Inventory [supervisor] (Raven et al., 1998)	the resources one person has available so that he or she can influence another person to do what that person would not have done otherwise	+ | +/- resource control but also several hierarchy variables 1) Reward impersonal 2) Coercive impersonal 3) Expert power 4) Referent power 5) Informational power 6) Legitimacy/position 7) Legit./reciprocity 8) Legit./dependence 9) Legit./equity 10) Personal reward 11) Personal coercion	+ 33 (e.g., "For past considerations I had received, I felt obliged to comply" for reciprocity)	+	-	+	+/-	+	No final answer whether a 11-, 7-, or 2-factor solution is preferable	EN, HE, MA	6.0
Power (resource control)	Rahim Leader Power Inventory [work] (Rahim, 1988)	ability of one party to influence or control the behavior and/or attitudes of another party	+ | +/- resource control but also several hierarchy variables 1) Reward power 2) Coercive power 3) Legitimate power 4) Expert power 5) Referent power	+ 35 (e.g., "M superior can take disciplinary action against me for insubordination" for coercive)	+	+/-	+	+	-		EN	6.0

Construct (according to our definition)	Instrument [Context]	Authors' definition of measured construct	Measured variable and factors	Items	Reliability		Validity			Notes	Languages	Score (out of 8; based on +)
			Labeled-construct content validity | Consensus content validity	Availability	Internal consis-tency	Sta-bility	Item gene-ration	Formal analy-sis	Relation with other variables			
Power/ Status (resource control; respect & esteem)	Perceived Power and Perceived Status Scales [work] (Yu et al., 2019)	asymmetric control over socially valued resources respect and admiration an actor has in the eyes of others	+ | + resource control; respect & esteem 1) Power 2) Status	+ 12 (e.g., "I have a good reputation among those I work with")	+	+/-	+	+	+	Also report of high self-other-agreement	EN	7.5
Power	Leader's Relational Power Scale [work] (Zhao et al., 2016)	power that stems from personal relationships with others	+ | / Relational power 1) Direct relational power 2) Indirect relational power	+ 6 (e.g., "He/she is able to acquire resources needed at work through his/her interpersonal relationships" for factor 2)	+	-	+	+	+		EN	6.0 / 7.0
Power (as potential influence)	Consumer Power Scale [consumption contexts] (Akhavannasab et al., 2022)	consumers' perceived ability to influence a firm's actions	+ | + ability to influence Consumer power (social power subscale)	+ 6 (e.g., "My opinion carried much weight with the […]")	+	-	+	+	+		EN	7.0
Power	Theories of Power Scale [general] (ten Brinke & Keltner, 2020)	beliefs about how power is gained and maintained	+ | / Lay beliefs on power 1) Coercive power 2) Collaborative power	+ 20 (e.g., "Maintaining power requires ruthlessness.")	+	-	+	+	+		EN	6.0 / 7.0
Power	Power Fluctuation Scale [work] (Anicich et al., 2020)	extent to which one subjectively perceives oneself as alternating between psychological states of high and low power across situations	+ | / Power fluctuation	+ 6 (e.g., "It is common for me to alternate between feeling powerful and powerless")	+	-	+	+	+		EN	6.0 / 7.0

Construct (according to our definition)	Instrument [Context]	Authors' definition of measured construct	Measured variable and factors	Items	Reliability		Validity			Notes	Languages	Score (out of 8; based on +)
			Labeled-construct content validity | Consensus content validity	Availability	Internal consis-tency	Sta-bility	Item gene-ration	Formal analy-sis	Relation with other variables			
Power	Reactions to Power Scale (Warren, 2014)	how people react (psychologically) to different types of power	+ | / Reactions to power bases (coercion, control, authority, influence, manipulate, persuade, power, pressure, referent, information, legitimacy, reward, expert)	+ 7 (e.g., "Person A pressures [defined as: constrain or compel] on Person B to obtain a desired outcome … I approve of the use of the above tactic")	+	-	+	+	+	IRT approach	EN	6.0 / 7.0
Status (respect & esteem)	Multidimensional Reputation Scale [work] (Zinko et al., 2016)	reputation for one's interactions (or lack thereof) with those around them "become known" in organizations for ability to perform tasks reputation for being a person of integrity	+ | + respect & esteem; prestige 1) Social reputation 2) Task reputation 3) Integrity reputation	+ 4 + 4 + 4 (e.g., "This person is known to be an expert in his/her area" for task reputation)	+	-	+	+/-	+/-		EN	6.0
Status (respect & esteem)	Children Social Status Scale [pupil] (Rodkin et al., 2013)	likeability and acceptance visible and what others value	+ | + respect & esteem 1) Preference 2) Popularity	+ 2 + 3 (e.g., "these are the most Popular kids in my class" for popularity)	+	+	-	+	+/-	Peer-report scale	EN	6.5
Status (respect & esteem)	Position-Reputation-Information scale [general] (Berl et al., 2020)	relative place in the social hierarchy; social opinion and esteem; wisdom, expertise, and learning	+ | +/- several hierarchy variables (2 is respect & esteem; 3 is similar to prestige) 1) Position 2) Reputation 3) Information	+ 7 (e.g., „wealthy" for position, „respected" for reputation, „educated" for information)	+	-	+	+	+/-		EN	6.0

Construct (according to our definition)	Instrument [Context]	Authors' definition of measured construct	Measured variable and factors Labeled-construct content validity | Consensus content validity	Items Availability	Reliability Internal consis-tency	 Sta-bility	 Item gene-ration	Validity Formal analy-sis	 Relation with other variables	Notes	Languages	Score (out of 8; based on +)
Status (rank)	Workplace Status Scale [work] (Djurdjevic et al., 2017)	an employee's relative standing in an organization, as characterized by the respect, prominence, and prestige he or she possesses in the eyes of other organizational members	+ | + Social rank	+ 5 (e.g., "I possess high status in my organization")	+	+/-	+	+	+		EN	7.5
Status (rank)	MacArthur Subjective Social Status Scale [general] (Adler et al., 2000)	subjective socio-economic status	+ | + social rank	+ 1 (Place a "X" on the rung [10-step ladder] where you think you stand relative to other people [money, education, job])	Not possibl e	+	+	Not possi ble	+		EN, CH, GE, PR	6.0 / 8.0
Status (rank)	Differential Status Identity Scale [general] (Thompson & Subich, 2006)	income, personal assets, personal control of the resources of others, economic security, education level, health insurance, and stability of family income; one's perceived control of social values; prestigiousness of one's occupation, level of consumerism, participation with	+ | + social rank (third subscale); resource control (first subscale) (second subscale has different power concepts and other variables) 1) Economic resources 2) Social power 3) Social prestige	+ 30 + 15 + 15 (e.g., "ability to travel recreationally" – compared to others: very much below average to very much above average)	+	-	-	+	+		EN	6.0

Construct (according to our definition)	Instrument [Context]	Authors' definition of measured construct	Measured variable and factors	Items	Reliability		Validity			Notes	Languages	Score (out of 8; based on +)
			Labeled-construct content validity | Consensus content validity	Availability	Internal consis-tency	Sta-bility	Item gene-ration	Formal analy-sis	Relation with other variables			
		other groups and subcultures, sense of value										
Dominance (agentic)	Revised Interpersonal Adjective Scales [general] (Wiggins et al., 1988)	assured-dominant	+ | + agentic dominance	+ 8 (e.g., "forceful") – circumplex structure (64 items in total)	+	-	+	+	+		EN, GE, PO, SP	7.0
Dominance (agentic)	Personality Research Form – Dominance subscale [general] (Jackson, 1965)	Attempts to control environment, and to influence or direct other people, express opinions forcefully, enjoys the role of leader and may assume it spontaneously	+ | +/- agentic dominance but also several hierarchy variables	+/- 16-20 (e.g., "I feel confident when directing the activities of others") (true-false forced choice)	+	+	+	+	+		EN, GE, SP, TU	7.0
Dominance (see fourth column)	California Psychological Inventory – Dominance subscale [general] (Gough, 1951)	prosocial interpersonal dominance, strength of will, and perseverance in pursuit of goals	+ | - several hierarchy and non-hierarchy variables	+/- 36 (e.g., "I have a natural talent for influencing people") (true-false forced choice)	+	+	+	+	+		EN, FR	6.5
Dominance (agentic)	Multidimensional Personality Questionnaire – Social potency subscale [general] (Tellegen, 1990)	Being forceful and decisive, persuasive and liking to influence others, enjoying or would enjoy leadership roles; enjoying being noticed, being	+ | - agentic dominance but also dominance motive	+ 25 (e.g., "When it is time to make decisions, others usually turn to me") (true-false forced choice)	+	-	+	+	+		EN, FR, SP	6.0

Construct (according to our definition)	Instrument [Context]	Authors' definition of measured construct	Measured variable and factors Labeled-construct content validity | Consensus content validity	Items Availability	Reliability Internal consis-tency	 Sta-bility	Validity Item gene-ration	 Formal analy-sis	 Relation with other variables	Notes	Languages	Score (out of 8; based on +)
		the center of attention										
Dominance (agentic)	Rank Style with Peers Questionnaire – Dominant leadership subscale [general] (Zuroff et al., 2010)	preferred strategies for pursuing, defending, and, when necessary, relinquishing social rank—assume a leadership role, in a dominant, assertive, and self-promoting fashion	+ | + agentic dominance (1 relevant subscale)	+ 6 (e.g., "I often take initiative and make suggestions")	-	+	+	+	+		EN	7.0
Dominance	Dominance scale [relationship] (Hamby, 1996)	decision-making power; right to intrude upon the other's behavior; failure to equally value the other partner & overall negative appraisal of partner's worth	+ | +/- coercive dominance (mostly in second subscale) and agentic dominance (often in first subscale) but also several other hierarchy variables 1) Authority 2) Restrictiveness 3) Disparagement	+ 32 (e.g. "I dominate my partner" for authority)	+	-	+	+	+		EN	6.5
Dominance	Fearless-Dominance from NEO-PI-R [general] (Witt et al., 2010)	social dominance, immunity to stress, and thrill seeking	+ | / Fearless-dominance	+/- 17 (e.g., "social confidence")	+	+	+	+	+/-	Scale score is stable across 10 years	EN	6.0 / 7.0
Dominance (coercive)/ Prestige	Dominance-Prestige Scales [strategies] (Cheng et al., 2010)	use of intimidation and coercion to attain a social status based largely on the	+ | +/- coercive dominance, dominance motive, prestige	+ 17 (e.g., "Some people are afraid of me")	+	+	+	+	+		EN	7.5

Construct (according to our definition)	Instrument [Context]	Authors' definition of measured construct	Measured variable and factors Labeled-construct content validity | Consensus content validity	Items Availability	Reliability Internal consis-tency	 Sta-bility	Validity Item gene-ration	 Formal analy-sis	 Relation with other variables	Notes	Languages	Score (out of 8; based on +)
		effective induction of fear; status granted to individuals who are recognized and respected for their skills, success or knowledge	1) Dominance 2) Prestige									
Dominance (coercive)/ Prestige/ Status	Self-Perceived Social Status Scale [general] (Buttermore, 2004)	use of force or the threat of force to gain resources; deference that is freely given by others; rewards that are reaped via dominant or prestigious strategies	+ | +/- coercive dominance and other hierarchy variables (dominance subscale), prestige, agentic dominance (status subscale) 1) Dominance 2) Prestige 3) Status	+ 28 (e.g., "I believe I have to fight my way to the top" for dominance)	+	-	+	+	+/-		EN, SP	6.0
Dominance (coercive)/ Prestige	Dominance Prestige Questionnaire (general) (Körner et al., 2023)	self-perception of coercive, intimidating, and aggressive behavior to enforce one's will; self-perception of being respected and admired for skills and expertise	+ | + coercive dominance, prestige 1) Dominance 2) Prestige	+ 15 (e.g., "Others are convinced of my achievements")	+	+	+	+	+		EN, GE	8.0
Need for Power	Unified Motive Scale [general] (Schönbrodt & Gerstenberg, 2012)	concern about having impact on other people by influencing their attitudes, emotions,	+ | +/- Power motive (1 relevant subscale)	+ 10 (e.g., "I like to have the final say")	+	+/-	+	+	+	Short versions with 6 and 3 items available	EN, GE	7.0

Construct (according to our definition)	Instrument [Context]	Authors' definition of measured construct	Measured variable and factors Labeled-construct content validity | Consensus content validity	Items Availability	Reliability Internal consis-tency	 Sta-bility	Validity Item gene-ration	 Formal analy-sis	 Relation with other variables	Notes	Languages	Score (out of 8; based on +)
		or behaviors and concern about having status and prestige										
Need for Power	Index of Personal Reactions [general] (Bennett, 1988)	egoistic striving for position [of power] to be able to impose one's will desire to persuade and affect others	+ | +/- Power motive (2 relevant subscales: need for power; need for influence)	+ 13 + 9 (e.g., "I would enjoy being a powerful executive or politician" for need for power)	+	+	+	+	+		EN	7.5
Need for Power	Need for Power Scale [general] (Moon et al., 2022)	desire for power for one's own ends; desire for power to help others	+ | +/- need for power, status or dominance 1) Personalized 2) Socialized	+ 18 (e.g., "I want to be able to have the power to help others succeed")	+	-	+	+	+		EN	6.5
Need for Dominance, Prestige	Dominance-Prestige-Leadership Scale [general] (Suessenbach et al., 2019)	wanting to coerce others into adhering to one's will; wanting to obtain admiration and respect	+ | + need for dominance/prestige (2 relevant subscales) 1) Dominance motive 2) Prestige motive	+ 10 + 10 (e.g., "I enjoy bending others to my will")	+	-	+	+	+	Short versions (6 or 4 items per scale) exist	EN, GE	7.0
Need for Status	Need for Status subscale from the New Machiavellianism Scale [general] (Dahling et al., 2009)	desire to accumulate external indicators of success (wealth, power, status)	+ | +/- Need for status	+ 3 (e.g., "Status is a good sign of success in life")	+	-	+	+	+		EN, GR	6.5
Need for Dominance, Status	Social Goal Questionnaire – Dominance and popularity subscales	no definition provided	- | + Need for dominance; respect & esteem 1) Dominance motive	+ 6 + 5 (e.g., "When I'm with people my own	+	-	+	+	+		EN	6.0

Construct (according to our definition)	Instrument [Context]	Authors' definition of measured construct	Measured variable and factors	Items	Reliability		Validity			Notes	Languages	Score (out of 8; based on +)
			Labeled-construct content validity | Consensus content validity	Availability	Internal consis-tency	Sta-bility	Item gene-ration	Formal analy-sis	Relation with other variables			
	[pupil] (Jarvinen & Nicholls, 1996)		2) Status motive	age, I like it when… they are afraid of me")								

Note. Score reflects the quality rating with "+" = 1, "+/-" = 0.5, and "-" = 0. As eight criteria were rated, the maximum score is 8. EN = English. AF = Afrikaans. CH = Chinese. DA = Danish. DU = Dutch. FR = French. GE = German. GR = Greek. HE = Hebrew. IT = Italian. JA = Japanese. MA = Malaysian. PO = Polish. PR = Portuguese. RO = Romanian. SP = Spanish. TU = Turkish. The complete list of scales is available online at https://socialhierarchyscales.github.io/.

Table 2

Empirical Study: Descriptive Statistics, Internal Consistencies, and Model Fit of Selected Hierarchy Scales

Scale	Construct/Subscale	*M*	*SD*	α	ω	AVE	Model fit
Self-reports							
PSPS	Power (8)	4.77	0.96	.89	.89	.50	$\chi^2(20) = 848.79$, $p < .001$; RMSEA = .231, 90% CI [.218, .244], $p < .001$; CFI = .913; TLI = .878
FPDPS	Felt power (6)	4.82	1.15	.87	.87	.55	$\chi^2(53) = 897.07$, $p < .001$; RMSEA = .143, 90% CI [.135, .151], $p < .001$; CFI = .958; TLI = .948
	Desired power (6)	3.00	1.33	.92	.92	.66	
PPPS	Power (6)	3.00	1.63	.94	.94	.71	$\chi^2(53) = 684.04$, $p < .001$; RMSEA = .124, 90% CI [.116, .132], $p < .001$; CFI = .981; TLI = .976
	Status (6)	5.24	1.00	.92	.92	.66	
DPS	Dominance (8)	2.83	1.09	.87	.87	.46	$\chi^2(118) = 2152.25$, $p < .001$; RMSEA = .149, 90% CI [.143, .154], $p < .001$; CFI = .848; TLI = .825
	Prestige (9)	5.06	0.87	.87	.86	.44	
DPQ	Dominance (6)	2.39	1.00	.83	.83	.46	$\chi^2(89) = 910.85$, $p < .001$; RMSEA = .109, 90% CI [.103, .115], $p < .001$; CFI = .957; TLI = .949
	Prestige (9)	4.88	1.01	.92	.92	.58	
DoPL	Dominance motive (6)	2.26	1.14	.91	.91	.62	$\chi^2(53) = 635.13$, $p < .001$; RMSEA = .119, 90% CI [.111, .127], $p < .001$; CFI = .962; TLI = .953
	Prestige motive (6)	4.46	1.08	.82	.81	.44	
IAS-R	Dominance (8)	3.75	1.16	.91	.90	.55	$\chi^2(20) = 1412.18$, $p < .001$; RMSEA = .299, 90% CI [.286, .312], $p < .001$; CFI = .914; TLI = .879
PRF	Dominance (16)	3.67	1.07	.91	.91	.40	$\chi^2(104) = 1935.27$, $p < .001$; RMSEA = .150, 90% CI [.145, .156], $p < .001$; CFI = .870; TLI = .850
IPIP-CPI	Dominance (10)	3.32	1.05	.89	.89	.48	$\chi^2(44) = 2458.05$, $p < .001$; RMSEA = .266, 90% CI [.257, .275], $p < .001$; CFI = .883; TLI = .854
AMS	Dominance motive (7)	4.10	1.20	.89	.90	.55	$\chi^2(76) = 1224.18$, $p < .001$; RMSEA = .139, 90% CI [.133, .146], $p < .001$; CFI = .926; TLI = .911
	Status motive (7)	4.16	1.11	.85	.85	.46	
SSS[a]	Status (1)	5.38	1.60	N/A	N/A	N/A	N/A
WSS	Workplace status (5)	3.80	1.54	.96	.96	.83	$\chi^2(5) = 246.75$, $p < .001$; RMSEA = .249, 90% CI [.223, .276], $p < .001$; CFI = .997; TLI = .995

Scale	Construct/Subscale	*M*	*SD*	α	ω	AVE	Model fit
PRIS	Position (3)	2.87	1.36	.88	.88	.70	$\chi^2(1) = 52.30$, $p < .001$; RMSEA = .069, 90% CI [.051, .089], $p < .001$; CFI = .995; TLI = .991
	Reputation (2)	5.15	1.10	.76	N/A	N/A	
	Information (2)	5.66	0.87	.79	N/A	N/A	
Peer-reports							
NPS	Reward (4)	4.50	1.52	.83	.84	.56	$\chi^2(160) = 2909.91$, $p < .001$; RMSEA = .149, 90% CI [.144, .153], $p < .001$; CFI = .954; TLI = .945
	Coercive (4)	4.95	1.40	.86	.87	.61	
	Legitimate (4)	5.81	0.82	.84	.85	.59	
	Expert (4)	5.71	1.07	.89	.89	.67	
	Referent (4)	5.88	0.92	.87	.87	.63	
IPI	Reward impersonal (3)	4.38	1.59	.82	.82	.61	
	Coercive impersonal (3)	3.91	1.65	.82	.83	.63	
	Expert (3)	4.85	1.38	.86	.86	.67	
	Referent (3)	4.74	1.32	.79	.80	.56	
	Information (3)	5.52	1.11	.84	.84	.63	
	Legitimacy/Position (3)	5.37	1.10	.73	.73	.48	$\chi^2(440) = 4314.14$, $p < .001$; RMSEA = .106, 90% CI [.104, .109], $p < .001$; CFI = .945; TLI = .934
	Legitimacy/Reciprocity (3)	4.10	1.40	.74	.75	.50	
	Legitimacy/Dependence (3)	5.17	1.09	.67	.67	.47	
	Legitimacy/Equity (3)	3.51	1.66	.88	.88	.71	
	Personal reward (3)	4.90	1.29	.81	.81	.58	
	Personal coercion (3)	4.08	1.51	.77	.79	.56	
	Harsh power bases (18)	4.15	1.16	.92	.91	.35	$\chi^2(494) = 9872.05$, $p < .001$; RMSEA = .156, 90% CI [.154, .159], $p < .001$; CFI = .867; TLI = .858
	Soft power bases (15)	5.13	0.94	.90	.90	.55	
MRS	Social reputation (4)	4.90	1.37	.91	.91	.73	$\chi^2(51) = 880.37$, $p < .001$; RMSEA = .145, 90% CI [.136, .153], $p < .001$; CFI = .993; TLI = 991
	Task reputation (4)	5.33	1.26	.87	.87	.63	

Scale	Construct/Subscale	*M*	*SD*	α	ω	AVE	Model fit
	Integrity reputation (4)	5.39	1.26	.95	.95	.83	

Note. N = 778. All scales had 7-point response options. PSPS = Personal Sense of Power Scale. FPDPS = Feeling Powerful and Desiring Power Scales. PPPS = Perceived Power and Perceived Status Scales. DPS = Dominance Prestige Scales. DPQ = Dominance Prestige Questionnaire. DoPL = Dominance Prestige Leadership Motive Scales. IAS-R = Revised Interpersonal Adjectives Scale. PRF = Personality Research Form (Dominance subscale). IPIP-CPI = International Personality Item Pool – California Psychological Inventory. AMS = Achievement Motivation Scales. SSS = Subjective Social Status Scale. WSS = Workplace Status Scale. PRIS = Position Reputation Information Scale. NPS = New Power Scales. IPI = Interpersonal Power Inventory. MRS = Multidimensional Reputation Scale. Number of items appears in parentheses behind each subscale (column Construct/Subscale). AVE = Average Variance Extracted.
[a] This scale had a 10-point response option.

Table 3

Recommendations to Improve Measurement Practices on Hierarchy Scales

Recommendations
• Researchers should be aware that the name of a specific scale does not necessarily reflect the hierarchy concept that the items address. It is essential to examine definitions by the scale authors as well as item content prior to using a specific scale.
• When assessing a specific hierarchy concept, it is advisable to define the target construct(s) in the theory section and ensure that the selected scale matches this definition (examining content validity of the items and nomological validity of the scale scores on variables that are preferably only related to this specific hierarchy concept).
• If psychometric properties are questionable or unknown from the scale validation articles, evidence of reliability and good model fit (e.g., conducting a CFA) based on one's own research should be provided to allow for an interpretation of the findings. If the original scale still does not show good model fit, the scale could be adapted (e.g., removing items with bad statistics, changing item-factor assignments), but items should still cover the full construct. Moreover, adaptations should be kept at a minimum, transparently reported, and evidence on the adapted scale's validity should be provided (see Heggestad et al., 2019).
• Longer scales sometimes mix various hierarchy terms. Therefore, the use of shorter scales (as long as construct coverage is given) can have the advantage that various hierarchy constructs are not conflated.
• With the use of relatively recently developed scales, scores may more realistically reflect distinctions among hierarchy concepts as used in newer research (see below). Moreover, evidence that scale scores are valid and reliable would be more up to date.

Consensus Definitions for Construct Categories (see also Figure 1)

Power	Status	Influence	Dominance	Prestige
asymmetric control over valued resources allowing the imposition of will	*the esteem and respect that an individual holds in the eyes of others*	*the ability to induce change in another party's behaviors, beliefs, feelings, or other states*	*a strategy to pursue social rank by demonstrating one's value—one's skills, knowledge, and expertise—to others*	*a strategy to pursue social rank by using actual or threatened force to induce fear*