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Environmental Context and Organizational Aspiration Determination

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ABSTRACT This research develops an attention-based, environment-inclusive model of organizational aspiration determination. The behavioural view embraces that organizations determine aspirations based on three reference points: past aspiration, past performance, and social reference group performance. We build hypotheses to explain how environmental munificence, dynamism, and complexity shape organizational attention allocation among these three reference points. Using data on US publicly traded firms (2006–16), we find that organizations, when determining sales aspirations, allocate (1) more attention to past aspiration and social reference group performance but less attention to past performance in more munificent environments; (2) more attention to past performance and social reference group performance but less attention to past aspiration in more dynamic environments; and (3) more attention to past performance but less attention to past aspiration and social reference group performance in more complex environments. Overall, we contribute to aspiration research by explicitly theorizing a previously understudied contingency, using direct aspiration measures from a wide range of industries, and providing evidence that organizations' attention allocation rules are regulated by the external environment when determining aspirations.

Keywords: organizational aspirations, attention-based view, environmental context, munificence, dynamism, complexity

INTRODUCTION

How do external environments that are highly differentiated regarding munificence, dynamism, and complexity regulate organizations' attention allocation in aspiration determination? Organizational aspirations, also called goals or targets (we use them interchangeably), refer to the desired performance levels of specific organizational outcomes (Shinkle, 2012). The behavioural theory of the firm (BTOF) proposes that an

organization determines its *aspiration level* through an adaptive learning process based on three reference points: *past aspiration*, *past performance*, and past performance of comparable organizations (hereafter, *social reference group performance* or *social reference*) (Cyert and March, 1963). These three reference points establish an additive aspiration determination model where the amount of attention to, or the importance of, each reference point is represented by a weighting parameter of that reference point (Blettner et al., 2015; Cyert and March, 1963).

Previous studies have used this aspiration determination model (also called aspiration adaptation or goal setting model), or its variants, to calculate aspiration proxies when explaining organizational behaviour and outcomes (e.g., Bromiley and Harris, 2014; Greve, 1998; Shinkle, 2012). A few studies have directly tested these models using direct aspiration measures (e.g., Blettner et al., 2015; Washburn and Bromiley, 2012). However, across these studies, different forms of aspiration models are used, and mixed findings regarding attention to (weight of) each reference point are reported. Research has argued that such mixed results can be reduced by adding contingencies (e.g., Van de Ven et al., 2013) and some aspiration work has explicitly examined such contingencies (Aranda et al., 2017; Berchicci and Tarakci, 2022; Blettner et al., 2015; Hu et al., 2017). This prior work, however, has not systematically investigated the role of the external environment, which has been indicated as important in both organizations' behavioural decisions and attention allocation.

Extending prior research, we draw from the BTOF and the attention-based view (ABV) to investigate the *external environment* as a contingency, thus a driver of attention shifts, in aspiration determination. We examine this contingency because (1) both the BTOF and the ABV have indicated the salience of external environments in shaping behavioural adaptation (Cyert and March, 1963; Levinthal and March, 1981) and attention allocation (Hoffman and Ocasio, 2001; Ocasio, 1997), and (2) a recent review on the BTOF has stated that '… the environmental influence on [organizations'] goals appears to be stronger now than when Cyert and March (1963) was written' (Gavetti et al., 2012, p. 24). In doing so, we help reconcile studies on aspiration determination with the core ideas of ABV and BTOF and we join a small group of scholars that have recently begun to examine environmental influences in organizational aspiration decisions based on the ABV (Berchicci and Tarakci, 2022; Shinkle et al., 2021).

Building on the ABV perspective that the environmental context shapes organizational attention allocation (Hoffman and Ocasio, 2001; Ocasio, 1995, 1997), we develop an *attention-based*, *environment-inclusive* model of aspiration determination. Our model explains that, when determining aspirations, organizations' attention allocation rules are regulated by three well-recognized dimensions of environmental context – munificence, dynamism, and complexity (Dess and Beard, 1984). To foreshadow our theoretical approach, we argue that these environmental dimensions respectively activate the mechanisms of *opportunity-seeking*, *certainty-seeking* (uncertainty-reducing), and *simplicity-seeking* (complexity-reducing) as simplified behavioural responses to the external environments. These mechanisms in turn regulate attention allocation rules in organizational aspiration determination. Our empirical analyses are based on a sample of US public firms from 2006 to 2016, and we find general support for our hypotheses.

Our research makes three contributions to the organizational aspiration literature. First, our work informs theory regarding the contingent role of environmental context in aspiration decisions. Although scholars in various literatures have paid attention to how external dynamics influence managerial decision making for decades (e.g., Ben-Oz and Greve, 2015; Lin et al., 2019; Miller and Friesen, 1977; Schimmer and Brauer, 2012), we still know little about how the environmental context influences organizational aspiration determination. We are aware of only one study has explicitly examined an environmental factor in the determination of aspirations – albeit environmental (toxic chemical waste) aspirations (Berchicci and Tarakci, 2022). Going beyond this study, we advance knowledge by examining a more comprehensive set of environmental dimensions and more generalizable financial aspirations. We provide novel, systematic theoretical arguments and empirical evidence that aspiration decision makers are not only informed by their organization's *past* experiences but are also attentive to their *current* environments – which breed *future* opportunities and constraints for their organizations. Importantly, our arguments differ from prior work by theorizing distinct causal mechanisms of *opportunity-seeking*, *certainty-seeking*, and *simplicity-seeking* as simplified behavioural responses to the specific environmental conditions. By incorporating environmental contingencies into aspiration determination, our work responds to calls from the Neo-Carnegie perspective (Gavetti et al., 2007) for more open systems perspectives that acknowledge organizational decision making as embedded in broader environmental contexts.

Second, our work uses *direct* aspiration measures that span industries and connect with managerial incentives (as opposed to performance targets primarily aimed at investors (e.g., Keum and Eggers, 2018)). Most prior work uses calculated aspiration proxies based on the Cyert and March's equation or its variants to examine the consequences of organizational aspirations (Bromiley and Harris, 2014; Shinkle, 2012). We join the limited work examining direct measures of aspiration levels and we uniquely place our work directly in the event of interest by investigating compensation performance targets that motivate managerial behaviour (Lim and McCann, 2014). In addition, most prior work using direct aspiration measures is constrained to a single firm or industry (for exceptions, see Berchicci and Tarakci, 2022; Keum and Eggers, 2018), yet our analyses are based on a sample from a wide range of industries, thus contributing to higher generalizability. Further, our analysis encompasses different performance metrics, different measures for social reference, and different aspiration models, thereby enriching the limited work using direct aspiration measures (e.g., Blettner et al., 2015; Keum and Eggers, 2018; Washburn and Bromiley, 2012). In so doing, our work responds to multiple calls for research on the varying processes of aspiration determination, such as variation in parameters, functional forms, performance metrics, social reference groups, and contextual factors (e.g., Shinkle, 2012; Washburn and Bromiley, 2012).

Third, our work explicitly synthesizes the three reference points along the dimensions of scope and intertemporality. While previous studies have such indications in their work (Berchicci and Tarakci, 2022; Blettner et al., 2015; Greve, 2002), we accentuate the temporal distinction between two aspiration reference points – past aspiration and past performance. This synthesis, in conjunction with our subsequent arguments, not only bridges with recent work that highlights the role of managerial cognition in behavioural decisions (Gavetti et al., 2007, 2012); it also provides

future research with a more explicit conceptualization of different aspiration reference points as temporally-distinct and scope-distinct information sources which have differential value contingent on context.

THEORETICAL BACKGROUND

Organizational Aspiration Determination

Research on organizational aspirations is dominated by the BTOF (Cyert and March, 1963), which suggests that organizations learn from the experiences of their own and comparable organizations to adjust their aspiration levels. In this regard, aspiration determination is viewed as a process of organizational learning from the experiences provided by the aforementioned three reference points (Aranda et al., 2017; Blettner et al., 2015). More specifically, an aspiration level in a certain time period is equal to the weighted average of past aspiration level, past performance, and social reference group performance as formulated in the following well-known equation from Cyert and March (1963):

$$A_t = a_1 A_{t-1} + a_2 P_{t-1} + a_3 C_{t-1}$$

where A is the aspiration level; P and C connote the organization's own performance and the performance of its social reference group, respectively; a_x is the parameter weight ranging from 0 to 1; and $a_1 + a_2 + a_3 = 1$. As such, the amount of attention on each reference point is represented by the parameter weight of that reference point (Cyert and March, 1963; Washburn and Bromiley, 2012). t is time. Given that aspiration determination is an adaptative result of experience-based learning and that each reference point represents a certain type of experience, it is important to discern the timeframe of experience captured by each reference point.

To ground our arguments, we provide a visual depiction of the time sequence of key factors involved in aspiration determination in Figure 1. This figure indicates that not only do the reference points differ in whether they represent the experience of the focal organization or of other organizations (Blettner et al., 2015; Greve, 1998), they are also distinguished in time reference (Berchicci and Tarakci, 2022). More specifically, A_{t-1} is set at the end of time period t−2 to capture accumulated experiences *before* t-1, while P_{t-1} and C_{t-1} capture the experiences *during* t−1. Given these differentiations, we synthesize the three aspiration reference points along two dimensions in Figure 2: the *intertemporality* dimension, dichotomized into historical and recent experience, and the *scope* dimension, dichotomized as self- and social experience. Specifically, *past aspiration* accumulates self-experience from preceding (historical) periods through aspiration adjustments over time (Cyert and March, 1963; Greve, 2003b) and encompasses an organization's mission and vision (Blettner et al., 2015). *Past performance* captures the organization's self-experience in the recent time period, while *social reference group performance* represents the recent experience of socially comparable organizations. Importantly, the aspiration literature acknowledges that observing the
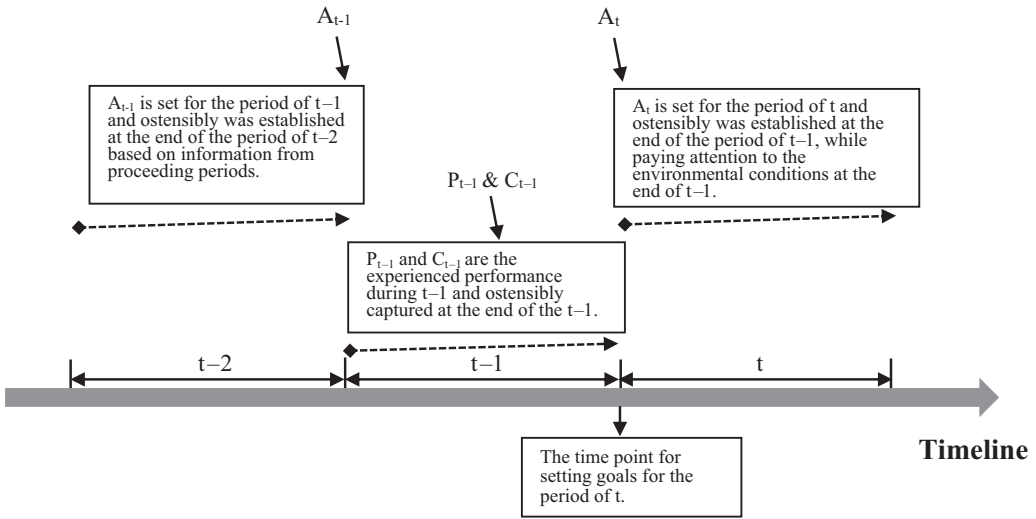
Figure 1. Depiction of the time sequence in the aspiration determination process

Figure 2. Synthesis of the three aspiration reference points

performance outcomes of comparable organizations enables the focal organization to infer the actions of these organizations and gain insights on cause-and-effect relationships (e.g., Aranda et al., 2017).

Some empirical studies on aspiration determination have expanded this original formula. For example, Mezias et al. (2002) examined an aspiration discrepancy model that included past aspiration, historical attainment and social attainment discrepancies. Washburn and Bromiley (2012) developed a varying parameters model and demonstrated that past performance relative to the industry median performance influences the parameter of, namely the amount of attention to, each reference point. Furthering this research, Blettner et al. (2015) found the existence of cross-sectional and intertemporal variations in the parameters of reference points and the contingent effect of organizational life cycle and age, while Hu et al. (2017) demonstrated that the consistency of two social reference points also acts as a contingency.

Aranda et al. (2017) further examined the contingent roles of organizational life cycle and performance deviations in aspiration determination. Keum and Eggers (2018) demonstrated that outstanding debt and institutional ownership motivate upward or downward striving in setting performance targets. Berchicci and Tarakci (2022) focused on the contingent roles of environmental volatility and locus of attention, while Ruckman and Blettner (2022) investigated how generic strategies influence social reference group selection when forming aspirations. The above eight studies, to our knowledge, are the only published works that have used *direct* measures of aspiration levels and seven of them (except for Keum and Eggers, 2018) have directly examined aspiration determination models. While these studies have provided evidence regarding the validity of aspiration models, they have only begun to account for heterogeneities in aspiration determination and provided little knowledge on the broader environmental influence (for an exception, see Berchicci and Tarakci, 2022) that has been identified as salient in other types of behavioural decisions (Ben-Oz and Greve, 2015; Schimmer and Brauer, 2012). As such, we investigate the environmental influence on organizational aspiration determination.

Environmental Context and Organizational Aspirations

Management studies have long emphasized the linkages between organizations and their broader environmental context (e.g., Aldrich, 1979; Child, 1972; Dess and Beard, 1984). A central argument in these studies is that environments not only provide resources and opportunities to the embedded organizations but also create uncertainties and constraints (Scott, 1992). Among these studies, Dess and Beard's (1984) three-dimension framework – which includes munificence, dynamism, and complexity – is most widely used. Given its prominence in the literature, we adopt Dess and Beard's (1984) three-dimension framework. These three dimensions depict continuous environmental conditions, rather than shock situations, that firms learn to cope with in their daily operations.

Organizations exist in highly differentiated environments, and organizational decision-making hinges on these environments (Nadkarni and Barr, 2008). However, existing studies on aspiration determination tend to limit their sample to a single firm or industry to preclude this environmental differentiation (Aranda et al., 2017; Blettner et al., 2015; Hu et al., 2011). Although a recent study by Berchicci and Tarakci (2022) has begun to consider multiple industries, they only examined the influence of environmental volatility on environmental aspirations (i.e., chemical waste levels), while the vast majority of aspiration studies focused on financial aspirations (i.e., sales revenue, ROA) (Bromiley and Harris, 2014; Shinkle, 2012). We believe that such preclusion constrains our knowledge building, since understanding attention allocation rules in aspiration determination under various environmental conditions not only enriches understanding of attention adaptation to environments but may also provide insight on organizational learning in such environments. Such understanding also has relevant practical implications for organizations embedded in contemporary business environments which are argued to be increasingly dynamic and to be 'more complex, more ambiguous, and less predictable' (Davis et al., 2009, p. 414). As such, in this research, we endeavour to contribute to this understanding.

BTOF, ABV, and their Recent Developments

Research on aspiration determination predominantly follows the seminal work of Cyert and March (1963) on the BTOF and draws from Ocasio's work on the ABV (Ocasio, 1997). In the conventional BTOF, aspiration determination is a firm decision that builds on the assumption of bounded rationality and follows simple heuristics to adjust aspiration levels based on performance feedback. However, this universal, simple-minded decision-making process originates from but does not fully capture insights in the original BTOF and its recent developments (e.g., Gavetti et al., 2012). As Simon (1979, p. 510) has noted, decision making 'mechanisms may be relatively simple, … but that simplicity operates in interaction with extremely complex boundary conditions imposed by the environment …', suggesting the indispensable role of environmental contexts in organizational decision making. Recent behavioural work also states that 'important decisions often result from deliberate attempts to anticipate future environments' (Gavetti et al., 2012, p. 9). In the more specific area of aspiration research, scholars have identified that firms, in some specific contexts, may consider forward-looking expectations (Chen, 2008; Gavetti and Levinthal, 2000). This forward-looking perspective indicates that aspiration decision makers may exhibit high attentiveness to the environmental context, because forward-looking expectations are manifested as cognitive representations of the environment (Berchicci and Tarakci, 2022; Gavetti and Levinthal, 2000; Shinkle et al., 2021). Collectively, these recent developments of the BTOF, while maintaining the assumption of bounded rationality, relieve the strong limitations on cognition when theorizing organizational decision makers.

The ABV is often viewed as a modern extension of the BTOF (Joseph et al., 2016). Attention refers to 'the noticing, encoding, interpreting and focusing of time and effort by organizational decision makers' (Ocasio, 1997, p. 189). The seminal work of Ocasio (1997, p. 188) proposed that 'what decision-makers do depends on what issues and answers they focus their attention on', and 'what issues and answers decision-makers focus on, and what they do, depends on the particular context or situation they find themselves in'. Resonating with this work, most previous aspiration research has adopted the notion of attention allocation from the ABV and studied the contexts that shape attention allocation rules (Berchicci and Tarakci, 2022; Blettner et al., 2015; Hu et al., 2017; Washburn and Bromiley, 2012). Drawing on and extending the ABV, we take the view that organizations allocate their attention among the three reference points when determining aspirations, and that the environmental context, as a situational factor, shapes their attention allocation rules.

HYPOTHESIS DEVELOPMENT

We develop hypotheses regarding how organizations allocate attention among the three reference points when determining aspirations in differentiated environments. Specifically, we argue that organizational decision makers focus on opportunities, uncertainties, and complexities that are respectively salient in munificent, dynamic, and complex environments. Consequently, these foci activate the mechanisms of *opportunity-seeking*,

certainty-seeking (uncertainty-reducing), and *simplicity-seeking* (complexity-reducing) respectively, which in turn regulate attention allocation rules in organizational aspiration determination. To establish a parsimonious and consistent theory, we ground our hypothesizing in the well-established view of aspiration determination as an experience-based learning process. Our key arguments are summarized in Table I, and the hypothesized outcomes are presented in Figure 3.

Table I. Key arguments on environmental influences on organizational aspiration determination

Contingencies	Theorized Mechanism	Key arguments	Attention
Hypothesis 1: Environmental munificence	Opportunity Seeking	• *Past aspiration* represents perceived successful, well-tested experiences that motivate possibility pursuit, and thus is perceived as more valuable for opportunity-seeking. • *Past performance* represents context-specific, one-time experiences that constrain possibility pursuit, and thus is perceived as less valuable for opportunity-seeking. • *Social reference group performance* represents social experiences that inform possibility pursuit, and thus is perceived as more valuable for opportunity-seeking.	**MORE to**: Past aspiration, Social reference group performance **LESS to**: Past performance
Hypothesis 2: Environmental dynamism	Certainty Seeking (Uncertainty Reducing)	• *Past aspiration* represents greatly eroded historical experiences that impede uncertainty reduction, and thus is perceived as less valuable for certainty-seeking. • *Past performance* represents the most up-to-date experience that informs uncertainty reduction, and thus is perceived as more valuable for certainty-seeking. • *Social reference group performance* represents a legitimacy-enhancing benchmark that facilitates uncertainty reduction and is therefore perceived as more valuable for certainty-seeking.	**MORE to**: Past performance, Social reference group performance **LESS to**: Past aspiration
Hypothesis 3: Environmental complexity	Simplicity Seeking (Complexity Reducing)	• *Past aspiration* represents temporally distant, complicated information that aggravates cognitive burden, and thus is perceived as less valuable for simplicity-seeking. • *Past performance* represents temporally proximate information that alleviates cognitive burden, and thus is perceived as more valuable for simplicity-seeking. • *Social reference group performance* represents external experiences of complex competitive interactions that aggravate cognitive burden, and thus is perceived as less valuable for simplicity-seeking.	**MORE to**: Past performance **LESS to**: Past aspiration, Social reference group performance

	H1: Munificence		H2: Dynamism		H3: Complexity	
Social		Social reference (+)		Social reference (+)		Social reference (−)
Self	Past aspiration (+)	Past performance (−)	Past aspiration (−)	Past performance (+)	Past aspiration (−)	Past performance (+)
	Historical	**Recent**	**Historical**	**Recent**	**Historical**	**Recent**

Figure 3. Hypothesized attention allocation under different environmental conditions with reference to the quadrants in Figure 2

Note: Social reference is an abbreviation for social reference group performance.

Environmental Munificence and Aspiration Determination

Environmental munificence indicates an abundance of resources that support embedded organizations' sustained growth and survival (Aldrich, 1979; Dess and Beard, 1984; Starbuck, 1976). Accordingly, a highly munificent environment is expected to provide embedded organizations with rich opportunities to be exploited (Dess and Origer, 1987). We argue that in highly munificent environments, organizational aspiration determination is grounded in an *opportunity-seeking* approach (also see Barreto, 2012), as a complement to problemistic search (Cyert and March, 1963). This opportunity-seeking approach resonates with the notion of upward-striving as discussed in prior aspiration research (e.g., Keum and Eggers, 2018) and with the idea of slack-driven organizational search in the broader behavioural work (Cyert and March, 1963; Iyer and Miller, 2008). Accordingly, we contend that, under an opportunity-seeking approach, reference points (and the experiences they represent) that *promote possibility pursuit* will be perceived as more valuable, and therefore receive more attention when determining aspirations.

We first argue that, in more munificent environments where the opportunity-seeking mechanism is likely to be activated to a higher degree, *past aspiration* receives more attention. This is because past aspiration accumulates experience from multiple historical periods over time; more explicitly, the self-reinforcing nature of learning underlying the aspiration determination process makes past aspiration the consequence of constantly reinforcing successful experience and learning from failure (Blettner et al., 2015; Levinthal and March, 1993). In other words, past aspiration represents accumulated experience being repeated many times in an organization's history and thus provides a well-tested pattern that has guided the organization to achieve its current status quo. In more munificent environments, organizations are more likely to produce high revenue and profits, which constitute their current status quo, than in environments of scarcity (Dess and Beard, 1984). As a result, organizations are more likely to attribute these high revenue and profits to their initial vision and mission (Levitt and March, 1988; Salancik and Meindl, 1984) which are encompassed in their past aspiration (see Blettner et al., 2015; March and Olsen, 1976). Thus, when determining aspirations, organizations pursuing opportunities in the environment tend to anchor on this favourable reference point that is perceived to have guided

the organization's current success and will likely be helpful in the pursuit of future success. Following these perspectives, we argue that in more munificent environments, past aspiration receives more attention because it represents perceived successful, well-tested experiences that promote possibility pursuit, and thus is perceived as more valuable for opportunity-seeking.

In contrast, we argue that, in more munificent environments where the opportunity-seeking mechanism is likely to be activated to a higher degree, *past performance* receives less attention. Past performance represents an organization's self-experience that occurred in the *recent* time period (Cyert and March, 1963; Greve, 2002), thereby representing a one-time success or failure. While the experience embedded in past performance does have some value, it is context specific to the last decision period and to the focal organization's activities in that particular period. Prior research suggests that opportunity-seeking organizations tend to search for a wide range of possibilities (Dutton and Jackson, 1987) and to upwardly strive (i.e., growth) (Kusa et al., 2022) with a promotion focus (McMullen and Kier, 2016). Following this logic, we argue that the context-specific experiences represented by past performance will constrain possibility pursuit to the existing accomplishments, and thus is perceived as less valuable for opportunity-seeking. By comparison, in less munificent environments, past performance is more valuable because resources and opportunities are scarce and the opportunity-seeking mechanism has limited activation. In this situation, past performance provides insight on realistic performance levels in scarce environments.

We further argue that, in more munificent environments where the opportunity-seeking mechanism is likely to be activated to a higher degree, *social reference group performance* also receives more attention. In highly munificent environments, decision makers want to learn *how* they could be performing on the prevalent opportunities as a legitimate response to such environments (Rosenbusch et al., 2013). In this situation, social reference, which represents the experience of comparable organizations (Blettner et al., 2015; Cyert and March, 1963), is a valuable benchmark. This is because the indicated benchmark informs how and how well comparable organizations are doing in the opportunity-rich environment and thus reveals possibilities that might be pursued by the focal firm for legitimacy reasons (Barreto and Baden-Fuller, 2006; DiMaggio and Powell, 1983). This view is consistent with prior behavioural work suggesting that munificent environments strengthen the benefits of exploratory learning (Li et al., 2013), such as learning from distant experiences of social reference groups. Therefore, we contend that, in more munificent environments, social reference receives more attention because social experiences inform possibility pursuit, thus is perceived to be valuable for opportunity-seeking. Collectively, we propose:

> *Hypothesis 1:* In more munificent environments, organizations allocate (a) more attention to past aspiration, (b) less attention to past performance, and (c) more attention to social reference group performance when determining aspirations.

Environmental Dynamism and Aspiration Determination

Environmental dynamism captures instability and uncertainty, since changes frequently occur in dynamic environments (Dess and Beard, 1984; Duncan, 1972). The underlying notion of environmental dynamism is also captured as environmental uncertainty (Galbraith, 1973),

unpredictability, velocity (Nadkarni and Barr, 2008), or turbulence (Aldrich, 1979) in the literature. Many factors could lead to dynamism, such as changing customer demands, regulatory policies, and technologies. In highly dynamic environments, high uncertainty impedes embedded organizations' ability to discern and predict patterns and regularities for effective decision making. Generally aligning with recent work (Nadkarni and Barr, 2008; Ocasio, 1997, 2011; Shepherd et al., 2017), we contend that organizations in more dynamic environments focus more on uncertainties and therefore activate the *certainty-seeking* (uncertainty-reducing) mechanism to a higher degree. This certainty-seeking is coincident with the well-accepted behavioural notion of uncertainty avoidance or risk avoidance that is theorized to underpin many organizational behaviours (Cyert and March, 1963). We contend that, under a certainty-seeking mechanism, reference points (and the experiences they represent) that *facilitate uncertainty reduction* will be perceived as more valuable, and therefore receive more attention when determining aspirations.

Overall dynamic environments may reduce the fidelity of *all* three reference points; however, our argument is that the attention allocation rules (i.e., relative attention) across these reference points will be shifted concordant with the level of environmental dynamism.

We first argue that, in more dynamic environments where the certainty-seeking mechanism is likely to be activated to a higher degree, *past aspiration* receives less attention. This is because the informational value of past aspiration, which represents an organization's historical experiences accrued from its long-term history encompassing its initial mission and vision, will be greatly eroded by the dynamically changing environment (see March, 1991; Posen and Levinthal, 2012). This eroded experience thus is of limited value for informing the focal organization regarding patterns and regularities, such as cause-and-effect relationships, in the highly dynamic environment. In other words, the changes occurring in dynamic environments greatly erode the value of past aspiration when organizations are striving to reduce uncertainties about performance achievement in the environment. This idea has support from the related literature on environmental jolts – which are characterized as creating an extreme dynamic event in the environment. This literature suggests that jolt conditions frequently prompt decision makers to change their organization's strategic direction to reduce failure risk (Li and Tallman, 2011; Tushman and Romanelli, 1985). Such a direction change is likely to invoke a different mission and vision for the shifted environmental context. Considering this an analogue of a dynamic environment suggests a depreciated value of past aspiration for certainty seeking. Therefore, we argue that, in more dynamic environments, past aspiration receives less attention because it represents greatly eroded historical experience that impedes uncertainty reduction, and thus is perceived as less valuable for certainty-seeking.

In contrast, we argue that in more dynamic environments where the certainty-seeking mechanism is likely to be activated to a higher degree, *past performance* receives more attention. This is because past performance captures self-experience that occurred in the most recent time period (Cyert and March, 1963); therefore, it provides the most up-to-date experience, which is valuable for reducing perceived uncertainties through inferring what is currently, or most recently, occurring. In other words, attending to and learning from self-experience in the recent period can infer at least some cause-and-effect relationships existing in the highly dynamic environment and this learning reduces

uncertainties about performance achievement. This argument has support from Audia and Greve (2006, p. 88), who noted that 'decision makers believe that their industry is highly dynamic, so that only recent performance data are valid indicators of future prospects'. All said, we contend that, in more dynamic environments, past performance receives more attention because it represents the organization's most up-to-date experience that informs uncertainty reduction, and thus is perceived to be more valuable for certainty-seeking.

Furthermore, we contend that, in more dynamic environments where the certainty-seeking mechanism is likely to be activated to a higher degree, *social reference group performance* also receives more attention. Social reference represents the most prominent benchmark that the focal organization can refer to gain legitimacy with stakeholders, and prior research indicates that legitimacy is valuable for reducing uncertainties (DiMaggio and Powell, 1983; Suchman, 1995). Existing routines for aspiration determination in relatively stable environments can meet the general expectations of stakeholders and thus are expected to raise less legitimacy concerns (see Scherer et al., 2013); however, high uncertainty creates a context that may change expectations and thus heighten legitimacy concerns. Therefore, in dynamic environments, organizations give a strong focus on achieving legitimacy in aspiration determination to reduce uncertainty (Shinkle et al., 2019). One way to obtain such legitimacy, to reduce uncertainty, is to learn from what comparable organizations have achieved in the dynamic environment (Suchman, 1995; Taeuscher et al., 2021). Prior aspiration studies have supported this idea by stating that 'in dynamic environments, managers rely more on peer units' (Aranda et al., 2017, p. 1193), and that, 'for organizations in turbulent environments, this feature makes social aspiration levels more valuable than historical aspiration levels' (Greve, 2003b, p. 47). Given these perspectives, we contend that in more dynamic environments, social reference receives more attention because it represents a legitimacy-enhancing benchmark that facilitates uncertainty reduction and is therefore perceived as more valuable for certainty-seeking. Hence, we propose:

> *Hypothesis 2:* In more dynamic environments, organizations allocate (a) less attention to past aspiration, (b) more attention to past performance, and (c) more attention to social reference group performance when determining aspirations.

Environmental Complexity and Aspiration Determination

Unlike dynamism, which concerns *intertemporal fluctuations* across a time period and is understood as lack of information, complexity concerns *cross-sectional heterogeneity* that complicates an organization's understanding of interactions within the environment at a certain time point. Environmental complexity captures the diversity or heterogeneity of the environment that generates a large amount of information for organizations to contemplate (Child, 1972; Dess and Beard, 1984; Duncan, 1972). Scholars have identified the complexity-simplicity dimension as one of the characteristics of environments with which the embedded organizations must contend (Emery and Trist, 1965). The most prominent cause of complexity discussed in the literature

is the heterogeneity of competitors, although the literature also acknowledges other causes or indicators of environmental complexity such as the number of market channels and the pace of technology change (Boyd, 1990; Evan, 1966). Compared to a concentrated (homogeneous) industry where a few large firms dominate, with a large number of heterogeneous competitors, it is complex, i.e., not simple, to understand the numerous possible activities, linkages, and interactions of these competitors taking action in the marketplace (Dess and Beard, 1984; Scott, 1992; Sharfman and Dean, 1991). Accordingly, we argue that organizations in more complex environments exhibit a higher level of focus on complexities and thus activate the *simplicity-seeking* (complexity-reducing) mechanism to a higher degree. The idea of simplicity-seeking is consistent with the strategy literature indicating that organizations search for ways to cope with complexity (Aldrich, 1979; Withers and Fitza, 2017) and also with the behavioural literature arguing that organizations pursue simplistic behavioural responses in complex environments (Cyert and March, 1963; Simsek, 2009). In highly complex environments, decision makers seek simplicity to ease their cognitive burden since they face a large quantity of information (O'Reilly, 1980; Simsek, 2009). We contend that, under a simplicity-seeking mechanism, reference points (and the experiences they represent) that *alleviate cognitive burden* will be perceived as more valuable, and thus receive more attention when determining aspirations.

We argue that, in more complex environments where the simplicity-seeking mechanism is likely to be activated to a higher degree, *past aspiration* receives less attention. This is because past aspiration, which represents the organization's long-term historical experiences including competitive experiences, accumulates a large quantity of temporally distant and complex information from over the organization's lifetime of competitive interactions. This temporally distant and complex information will depreciate in value because it requires substantial cognitive effort to process. The idea that substantial cognitive effort is required to process complex information has been supported by Sweller (1988, p. 265) who stated that, 'a parallel system should require more routes or channels (communication bandwidth) to handle complex rather than simple search mechanisms'. Such argumentation has additional support from the organizational learning literature, which indicates that the value of experiences accumulated from the long-term history of the organization will depreciate in value as new experiences are encountered (Argote et al., 1990; Argote and Miron-Spektor, 2011). In highly complex environments that are constituted by a diverse set of competitors taking action (Dess and Beard, 1984), organizations are anticipated to frequently encounter new competitive experiences. Therefore, we argue that in more complex environments, past aspiration receives less attention because long-term historical experiences, which incorporate temporally distant and complex information, aggravate cognitive burden, and thus will be perceived as less valuable for simplicity-seeking.

In contrast, we argue that, in more complex environments where the simplicity-seeking mechanism is likely to be activated to a higher degree, *past performance* receives more attention. This is because, compared with long-term historical experience and prior learning, recent self-experience represented by past performance is more temporally proximate; therefore, processing (i.e., assessing and learning from) this experience invokes less cognitive effort, which alleviates cognitive burden and lowers cognitive overload risks. This

perspective resonates with the literature indicating that processing recent information involves less cognitive effort than historical information due to the recency effect (Davelaar et al., 2005). The recency effect refers to a cognitive inclination in which those items, ideas, or arguments that came last are remembered more clearly than those that came first. As a result, we argue that, in more complex environments, past performance receives more attention because processing this temporally proximate experience alleviates cognitive burden, and thus is perceived as more valuable for simplicity-seeking.

We further argue that in more complex environments where the simplicity-seeking mechanism is likely to be activated to a higher degree, *social reference group performance* receives less attention. In general, compared with internal experience, learning from external experience requires greater material and cognitive effort (March, 1991). We contend that this cognitive effort is multiplied by the diverse set of competitors (i.e., comparable organizations) anticipated in highly complex environments. In such conditions, the diverse set of competitors may take highly divergent courses of action and thus learning from their experiences may be difficult (i.e., causal ambiguity noted by Dierickx and Cool, 1989). Namely, this divergence makes it cognitively difficult to identify who to learn from and what exactly to learn (Gaba and Terlaak, 2013; Strang and Still, 2006). As a result, organizations will shift attention away from these competitors' experiences. This idea is supported by prior studies suggesting that 'the historical aspiration level [here referring to the performance of their own organization] is likely to be used when information about others is unavailable or biased' (Greve, 2002, 1). Aligning with these perspectives, we argue that in more complex environments, social reference receives less attention because it represents external experiences of complex competitive interactions that aggravate cognitive burden, and thus has limited perceived value for simplicity-seeking. Consequently, we propose:

> *Hypothesis 3:* In more complex environments, organizations allocate (a) less attention to past aspiration, (b) more attention to past performance, and (c) less attention to social reference group performance when determining aspirations.

DATA AND METHODS

The sample for our investigation consists of a panel of US public firms with coverage from 2006 to 2016. We collected data on 388 firms across multiple industries with valid data on the direct measures of aspiration levels. After excluding missing values, we obtained 2109 firm-year observations for testing our hypotheses. This sample is suitable for our investigation for several reasons. First, since the major purpose of our research is to investigate the contingent role of differentiated environmental context in the aspiration determination process, this sample provides considerable variability in industries and thus in environmental conditions. Second, using *only* public firms can mitigate the influence of some confounding factors (i.e., impression management) associated with the aspiration determination process. Further, focusing on one of the most frequently studied countries – the USA – allows for excluding the influence of other types of environmental factors such as institutional settings (e.g., Chan and Makino, 2007).

The main dataset is derived from executive compensation data provided by *ISS Incentive Lab*, which collects goal targets (aspiration levels) data from US publicly traded firms' proxy statements published in SEC filings. Public firms' proxy statements include a section called 'Compensation Discussion and Analysis'; this section reports detailed information about top executive compensation (i.e., cash awards or bonuses), which is determined based on the achievement of certain performance goals of an organization. For example, in 2016, Tim Cook, the CEO of Apple Inc. was planned to receive a 100 per cent cash incentive conditional on the achievement of $215.6 billion in net sales and $60.0 billion in operating outcome for the company. As such, the $215.6 billion reflects Apple's desired performance level (aspiration level or goal target) in net sales in 2016. We believe that this goal targets data for management incentives is more suitable for our theoretical purpose than analysts' forecasts data used by some prior studies (e.g., Keum and Eggers, 2018). This is because goal targets for management incentives have performance-improving implications, while goal targets predicted by analysts are aimed at investors and may sometimes serve as mollification devices as stock repurchase programmes do (Sanders and Carpenter, 2003). Although the ISS executive compensation data source is seldom used in management research, it is highly recognized in accounting and finance research (e.g., Jiraporn et al., 2012). In addition, this data source includes all S&P 500 and a significant proportion of S&P MidCap 400 firms; therefore, it is well recognized and highly standardized. We obtain all available data on explicit goal targets on sales revenue and earnings per share (EPS) for each firm each year. To obtain demographic and financial information on sample firms, we extract unique firm identifiers from *ISS Incentive Lab* and then collect data from *Compustat* based on these firm identifiers. To obtain industry-level data, we follow prior studies (e.g., Luo et al., 2014) to collect data on all public firms in each industry each year from *Compustat* and use aggregate values.

Measures

Aspiration level. We use the objective and absolute value of the *sales target* of each firm for each year to measure aspiration level. Using a direct aspiration measure is one of the contributions of our research since most prior empirical studies (e.g., Greve, 1998; Kim et al., 2015; Kuusela et al., 2017) only calculate aspiration proxies based on mathematical combinations of reference points; thus, our approach reduces measurement error. Meanwhile, we adopt sales revenue (frequently abbreviated as sales) as the aspiration dimension (performance metric) for three reasons. First, while previous research on aspiration consequences frequently use return on assets (ROA) as the performance metric, studies on aspiration determination predominately uses sales (e.g., Blettner et al., 2015; Mezias et al., 2002; Washburn and Bromiley, 2012); therefore, we adopt the sales performance metric to maintain comparability with the extant literature. Second, prior work indicates that unscaled performance metrics such as net income are of primary interest for managers (Bromiley and Harris, 2014); therefore, sales revenue is such a metric that draws high managerial attention. As noted by Bromiley and Harris (2014, p. 355), 'accounting measures such as net income – while biased measures of true performance – may be salient measures to analyze for aspirations-based work'. Third, based on the goal target data documented by the *ISS Incentive Lab*, sales revenue is a frequently used performance metric reported by US public firms. Furthermore, to examine the generalizability of our hypothesized relationships, we also use return

on assets (ROA) and earnings per share (EPS) as performance metrics in our additional analyses.

Reference points. *Past aspiration* is measured by the sales target of the focal firm in the previous year (Mezias et al., 2002; Washburn and Bromiley, 2012). Although past aspiration is measured by a one-year lag, it accumulates information of the focal firm adjusted from the preceding periods over time. *Past performance* is measured by the actual sales performance (or revenue) achieved in the previous year. *Social reference group performance* is measured as the median firm sales within the focal firm's industry in the previous year. Industry groups are categorized based on four-digit SIC codes. We use median rather than mean to reduce the impact of outliers and data skewness (Washburn and Bromiley, 2012). Since the literature also suggests that the social reference group can be defined in different ways, such as best-in-class organizations (Norton and Kaplan, 1996) or most relevant (i.e., similar) organizations (Moliterno et al., 2014), in the additional analyses, we also use industry average performance, the average performance of top 25 per cent, top 20 per cent, top 10 per cent, and top 5 per cent firms in the industry, and the average performance of the five most similar firms in the industry based on size as the proxy for this variable.

Moderators. Following prior work on the three-dimension framework of environmental context (Boyd, 1990; Brauer and Wiersema, 2012; Dess and Beard, 1984), we categorize industries based on four-digit SIC codes and adopted the well-accepted measures for the three environmental dimensions. To measure the level of *munificence*, we first regress the five previous years' log-transformed mean industry sales and log-transformed operating income against year, using the equation $y_t = b_0 + b_1 \times t + e_t$, where y_t is the log-transformed industry sales or operating income, t is year, and e_t is the residual. We then calculate the anti-log (exponential) of regression coefficients (b_1) of the two equations and take the average of the antilog of the betas as the proxy of munificence (Cooper et al., 2014; Fernhaber and Patel, 2012; Gligor et al., 2015). A higher value indicates a higher level of munificence. Similarly, to measure the level of *dynamism*, we first calculate the anti-log of the standard error of the beta in each of the regressions, and then take the average of anti-log of the standard errors as the proxy (Fernhaber and Patel, 2012). A higher value indicates a higher level of dynamism. The level of *complexity*, as previously explained, is represented by heterogeneity in the environment. Following prior studies (e.g., Boyd, 1990; Li et al., 2008; Withers and Fitza, 2017), we theorize about the heterogeneity of competitors which has traditionally been measured as the inverse of industry concentration. We calculate the Herfindahl index (*HHI*) ($HHI = \sum market\ share_i^2$, where i is the number of firms within the industry) to represent industry concentration and use the inverse of *HHI* (subtracting from 1) to represent complexity. We also use alternative measures of the three moderators in the additional analyses.

Controls. We add several control variables to exclude confounding effects. *Firm size* is measured by the number of employees (transformed by natural log). *Leverage* is measured by the total long-term debt to total assets (Nakauchi and Wiersema, 2015; Pathak et al., 2014). *CEO change* is measured as a dummy variable to capture whether the focal firm has changed its CEO in the focal year or not. Data for this variable were collected

from *Execucomp*. In this research, we include only a limited number of controls following previous studies on aspiration determination (e.g., Mezias et al., 2002) because variables that can predict the dependent variable (current aspiration level) may also be highly correlated with independent variables (i.e., past aspiration, past performance), and thus may introduce multicollinearity or Type I errors (Kalnins, 2018).

RESULTS

Table II presents descriptive statistics and correlations of all relevant variables in our regression models. The results show that current aspiration level, past aspiration, and past performance are highly correlated, which is consistent with previous research on aspiration determination (Mezias et al., 2002; Washburn and Bromiley, 2012). Despite the high correlation among independent variables (three reference points), we include them in the same equation and estimate the regression coefficient (the weight or attention) of one reference point *conditional* on the existence of the other two. This is consistent with our theory, which is built on the original aspiration determination model in the BTOF and the rationale of attention allocation among three reference points (Blettner et al., 2015; Cyert and March, 1963). In addition, all our control variables have low correlations with

Table II. Descriptive statistics and correlation matrix

	1	2	3	4	5	6	7	8	9	10
1. Current aspiration	1									
2. Past aspiration	0.987	1								
3. Past performance	0.983	0.981	1							
4. Social reference	0.374	0.382	0.367	1						
5. Munificence	0.015	−0.001	0.012	−0.027	1					
6. Dynamism	−0.089	−0.088	−0.080	−0.013	−0.010	1				
7. Complexity	−0.086	−0.093	−0.088	−0.307	0.070	−0.226	1			
8. Firm size (log)	0.577	0.588	0.587	0.334	−0.038	−0.151	−0.161	1		
9. Leverage	−0.020	−0.017	−0.020	0.037	−0.022	−0.042	0.059	0.035	1	
10. CEO change	−0.004	−0.002	0.000	0.021	−0.022	−0.003	−0.047	0.040	0.023	1
Mean	450.853	403.741	424.811	20.283	0.014	0.001	0.041	2.264	0.047	0.089
SD	21.233	20.093	20.611	4.504	0.119	0.029	0.202	1.505	0.217	0.298
Min	0.001	0.001	0.005	0.000	0.471	1.003	0.000	−1.852	0.000	0
Max	223.680	188.000	233.715	43.251	3.964	1.336	0.989	6.290	2.096	1

Note: N = 2109; absolute values greater than 0.045 are signficant at 95 percent level; performance and aspiration measures are measured in billions; social reference is an abbreviation for social reference group performance.

independent variables and moderators, thus including controls will not significantly distort our results while mitigating possible confounding effects.

To address the possible selection bias, we adopted the Heckman two-stage model (Heckman, 1979) to test our hypotheses. In the first stage, we estimated a probit regression model to predict the likelihood that a random firm will report its sales target in a given year based on the entire sample downloaded from *Compustat*. In this first stage model, we included firm size, leverage, CEO change, whether a firm reported its sales target in the previous year or not, the number of firms in the same industry reporting sales targets, and historical and social performance discrepancies as the predicting variables. The first-stage regression results are reported in Appendix A in the online supplemental material. The results show that all of the above predictors, except for positive historical performance discrepancy, have significant effects on the likelihood that a firm will report sales target in a given year. We calculated the non-selection hazard index based on the first-stage regression and then controlled for this index as the *inverse Mills ratio* in our second-stage regressions.

In the second stage, we used fixed-effects models with the regression equation indicated as below, to test how the three dimensions of environmental context influence the weights of, or attention to, the three reference points. We chose the fixed-effects approach to remove stable cross-firm variation, thereby ameliorating the problem of cross-firm comparison, particularly for unscaled performance metrics such as sales. The Hausman tests also support the fixed effects approach. We did not cluster standard errors as some studies do (e.g., Mezias et al., 2002; Washburn and Bromiley, 2012) because in our analysis past aspiration and current aspiration represent the same variable describing each cluster. Thus, clustering will overly absorb (underestimate) the variation of current aspiration caused by past aspiration. Although our regression models cannot constrain the aggregation of all parameter weights into one, as suggested by Cyert and March (1963), we follow most of the existing research on aspiration determination by checking the direction and magnitude of the regression coefficient (weight) on each reference point (Aranda et al., 2017; Mezias et al., 2002; Washburn and Bromiley, 2012). We acknowledge that some studies used a grid search to estimate the weights of three reference points in the first step and then employed the multivariate regression approach to estimate the effects of other factors on the weight of each reference point (Blettner et al., 2015; Hu et al., 2017). While this approach is useful to constrain the sum of all parameter weights into one, it requires a large number of data points in its first step to obtain several estimated parameters for each single firm. Due to data availability, we use traditional regression models to achieve data efficiency while performing a number of additional tests (which we will discuss later). To test our hypotheses, we included interaction terms of each environmental dimension and the three reference points and examined the sign and significance of these interaction terms. To mitigate multicollinearity concerns and aid interpretation, we mean-centred all the independent variables and the moderators (Kennedy, 2003).

$$A_t = a_1 A_{t-1} + a_2 P_{t-1} + a_3 C_{t-1} + a_4 Munificence_t + a_5 Dynamism_t + a_6 Complexity_t$$
$$+ a_7 FirmSize(Emp)_{t-1} + a_8 Leverage_{t-1} + a_9 CEOChange_{t-1} + a_{10}\varepsilon_{t-1}$$

Table III presents the regression results of our second-stage models. Model 1 is the baseline model with all control variables included. In Model 2, we include the three aspiration reference points simultaneously. Past aspiration (b = 0.051, p < 0.05) and past performance (b = 0.844, p < 0.001) have positive and significant effects on the current aspiration level – which are consistent with the original equation proposed by Cyert and March (1963) and with most of prior work on aspiration determination (e.g., Lant, 1992; Mezias et al., 2002). However, the effect of social reference is not significant in our sample (b = 0.008, p > 0.1), which resonates with the recent aspiration literature arguing for the ambiguity of social reference groups for different organizations (e.g., Hu et al., 2017; Washburn and Bromiley, 2012). This finding also propels the consideration of contingent factors that make the social comparison with industry median more salient in some situations but less salient in others. Furthermore, given that the parameters of three reference points represent the amount of attention they receive, we also analysed standardized regression coefficients: past aspiration (b = 0.048), past performance (b = 0.818), and social reference (b = 0.002). These results suggest that a hypothetical average organization allocates 4.8 per cent of attention to past aspiration, 81.8 per cent of attention to past performance, and only 0.2 per cent of attention to social reference.

In Model 3, we include the direct effects of all three reference points and all three environmental dimensions. The results show that none of the environmental dimensions has a significant direct effect on current aspiration level, while past performance and past aspiration remain significant when environmental conditions are included. In Model 4, we test how the weights of, or the attention on, three aspiration reference points are shaped by environmental munificence. The interaction between munificence and past aspiration is positive and significant (b = 1.040, p < 0.001), the interaction between munificence and social reference is also positive and marginally significant (b = 0.269, p < 0.1), while the interaction between munificence and past performance is negative and significant (b = −1.022, p < 0.001). Therefore, Hypothesis 1 is supported in our sample on sales aspiration determination. To ease interpretation, we graph the effects of the three reference points under high (one standard deviation higher than the mean) and low (one standard deviation lower than the mean) levels of munificence in the top row of Figure 4. The graphs visually show that past aspiration and social reference only have positive effects on the current aspiration level in environments with high munificence. In contrast, past performance has a stronger positive effect under low munificence than under high munificence.

Model 4 includes the interaction terms of environmental dynamism and three reference points to test Hypothesis 2. As seen in Model 4, the interaction between dynamism and past aspiration is negative and significant (b = −9.529; p < 0.001), the interaction between dynamism and past performance is positive and significant (b = 7.566; p < 0.001), and the interaction between dynamism and social reference is also positive and significant (b = 3.403; p < 0.001). Thus, Hypothesis 2 is supported. To ease interpretation, we also graph the moderating effects of dynamism in the middle row of Figure 4. The graphs show that, in environments with high dynamism, past performance and social reference have stronger positive effects compared with environments with low dynamism. However, past aspiration has a strong positive effect only in environments with low dynamism.

Table III. Regression analysis on the influence of environmental context on the determination of sales aspiration

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Past aspiration		0.051*	0.051*	0.069**	0.105***	0.043[+]	0.118***
		(0.022)	(0.022)	(0.023)	(0.022)	(0.022)	(0.022)
Past performance		0.844***	0.846***	0.834***	0.785***	0.916***	0.835***
		(0.022)	(0.022)	(0.023)	(0.022)	(0.025)	(0.025)
Social reference		0.008	0.005	0.001	0.011	−0.027	−0.014
		(0.029)	(0.029)	(0.029)	(0.027)	(0.034)	(0.032)
Munificence			0.617	0.855			1.387**
			(0.545)	(0.568)			(0.535)
Dynamism			3.547		−7.878**		−7.429*
			(2.772)		(3.002)		(2.968)
Complexity			1.205			0.735	1.069
			(1.175)			(1.176)	(1.120)
Munificence × Past aspiration				1.040***			1.008***
				(0.220)			(0.208)
Munificence × Past performance				−1.022***			−0.934***
				(0.215)			(0.203)
Munificence × Social reference				0.269[+]			0.283[+]
				(0.144)			(0.166)
Dynamism × Past aspiration					−9.529***		−9.693***
					(0.730)		(0.724)
Dynamism × Past performance					7.566***		7.808***
					(0.770)		(0.759)
Dynamism × Social reference					3.403***		2.573**
					(0.798)		(0.828)
Complexity × Past aspiration						−0.230*	−0.422***
						(0.090)	(0.092)
Complexity × Past performance						0.415***	0.539***
						(0.088)	(0.085)
Complexity × Social reference						−0.155[+]	−0.095
						(0.089)	(0.086)
Firm size (log)	5.069***	0.309	0.304	0.239	0.390[+]	0.151	0.155
	(0.501)	(0.233)	(0.233)	(0.233)	(0.221)	(0.232)	(0.220)
Leverage	1.825	−0.070	−0.047	−0.127	−0.025	−0.130	−0.139
	(1.316)	(0.592)	(0.594)	(0.590)	(0.561)	(0.588)	(0.554)
CEO change	−0.212	−0.013	−0.017	0.010	−0.067	−0.042	−0.064
	(0.387)	(0.174)	(0.174)	(0.173)	(0.165)	(0.172)	(0.162)

(Continues)

Table III.   (Continued)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Inverse Mills ratio	4.669***	0.369	0.375	0.354	0.414^{+}	0.383	0.408^{+}
	(0.530)	(0.244)	(0.244)	(0.242)	(0.231)	(0.241)	(0.226)
Constant	−32.896***	5.401*	5.349*	5.816*	7.105**	7.204**	8.901***
	(5.232)	(2.395)	(2.396)	(2.379)	(2.279)	(2.386)	(2.248)
Year dummies	Included	Included	Included	Included	Included	Included	Included
sigma_u	16.18	3.940	3.944	3.895	3.907	3.664	3.745
sigma_e	4.742	2.129	2.128	2.113	2.015	2.105	1.973
Rho	0.921	0.774	0.774	0.773	0.790	0.752	0.783
Observations	2109	2109	2109	2109	2109	2109	2109
Number of firms	388	388	388	388	388	388	388
R-squared	0.151	0.829	0.830	0.832	0.847	0.833	0.854
F	20.27***	459.6***	394.3***	383***	428.7***	386.6***	330.6***

Note: number of firms = 388; number of observations = 2109; year fixed effects controlled; standard errors in parentheses; ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$, $^{+}p < 0.1$; performance and aspiration measures are measured in billions; social reference is an abbreviation for social reference group performance.
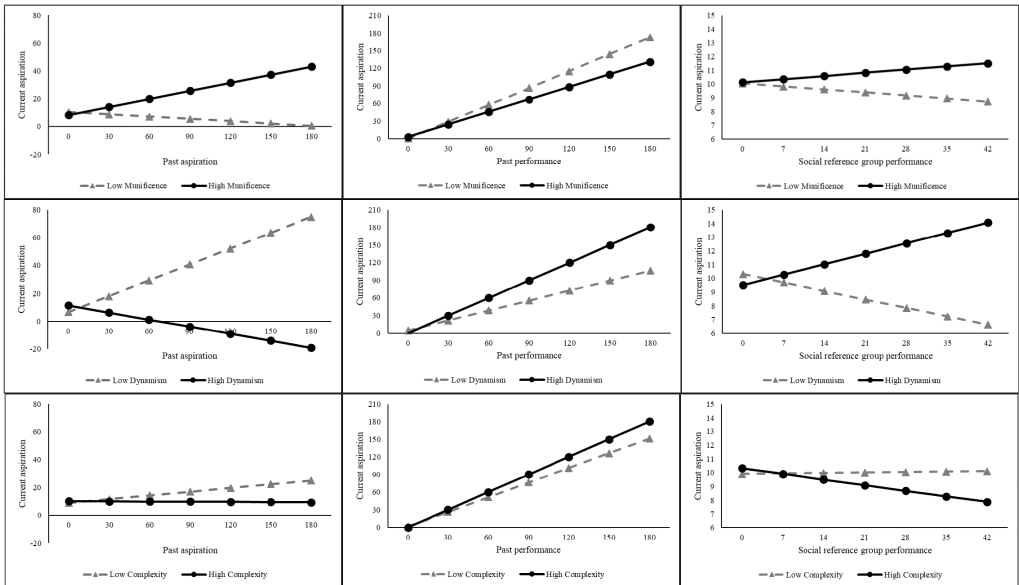

Figure 4. Moderating effects of environmental munificence, dynamism, and complexity

Hypothesis 3 predicts the effects of the three reference points under varying conditions of complexity. Model 5 is estimated to test this hypothesis by including the interaction terms of complexity and three reference points. The model reports that the interaction between past aspiration and complexity is negative and significant

(b = −0.230; p < 0.05) and the interaction between complexity and social reference is negative and marginally significant (b = −0.155; p < 0.1), while the interaction between complexity and past performance is positive and significant (b = 0.415; p < 0.001). The results thus provide support for Hypothesis 3. Based on the coefficients in Model 5, we graph the relationships in the bottom row of Figure 4. The graphs show that, in environments with high complexity, past performance has a stronger positive effect on the current aspiration level compared with environments with low complexity. However, past aspiration and social reference only have positive effects in environments with low complexity.

Additional Analyses

We conducted several additional analyses to examine the robustness and generalizability of our results and to advance the understanding of aspiration determination models (see online supplemental material for all referenced appendices). First, we estimated multilevel models by nesting firm-level observations into industries. The results are fully consistent with those reported in Table III. Second, since independent variables such as past aspiration and past performance might be endogenous to other strategic variables, we utilized the instrumental variables approach (following Washburn and Bromiley, 2012) to account for endogeneity (Bascle, 2008) of past aspiration and past performance. The results (see Appendix B) show generally consistent findings with those reported in Table III. Third, we test our hypotheses using alternative measures for munificence and dynamism. More specifically, we used regression slope coefficient (regressing time against industry sales for the past five years) divided by the corresponding mean value of industry sales in the preceding five years (e.g., Mishina et al., 2010) to measure munificence, while dynamism is captured by dividing the standard error of the regression slope coefficient (sales over time) by the mean value of industry sales (e.g., Mishina et al., 2010; Richard et al., 2019). The results (see Appendix C) are largely consistent as reported in Table III. Meanwhile, since both these two alternative measures of munificence and dynamism are derived from mean industry sales, we tested their independence using Hoefflin's independence test (Hoeffding, 1948); the results suggest that munificence and dynamism are independent (D = 0). Fourth, given the variation of complexity measures in the literature, we used four alternative measures of complexity based on the inverse of industry concentration indexes including the MINL index (Azadegan et al., 2013), the C_4-Herfindahl index, the C_8-Herfindahl index, and the Keats and Hitt's (1988) measure. The results (see Appendix D) are consistent for their effects on past aspiration and past performance, but not for social reference.

Fifth, to assess the generalizability of this research, we tested our hypotheses using two alternative aspiration dimensions: ROA and EPS. The results for environmental influences on aspiration determination for ROA and EPS are presented in Appendices E and F. While ROA is widely used in research on aspiration consequences (e.g., Arrfelt et al., 2013; Greve, 2003a), EPS is recommended because it is a market measure that is not subject to the influence of firm variables such as firms' deprecation policies and inventory valuation techniques (Bromiley and Harris, 2014). The results

show that all three reference points are positive and significant determinants of current aspiration levels of ROA and EPS. Regarding the contingent effects of environmental variables, we find some consistent results but also a few divergent relationships for different aspiration dimensions. More specifically, in ROA aspiration determination, organizations allocate more attention to past aspiration and social reference but less attention to past performance in more munificent environments; they pay more attention to social reference but less attention to past aspiration in more dynamic environments; and they pay more attention to past aspiration and social reference but less attention to past performance in more complex environments. In EPS aspiration determination, organizations allocate more attention to past performance in more munificent environments; they allocate more attention to past performance but less attention to the other two reference points in more dynamic environments; and they allocate more attention to social reference but less attention to past performance in more complex environments.

Sixth, given that the recent aspiration literature has lamented about the ambiguity of social reference groups (e.g., Hu et al., 2017; Washburn and Bromiley, 2012), we also tested the hypothesized relationships using different measures of social reference group performance, including industry average performance, the average performance of the top 25 per cent, top 20 per cent, top 10 per cent, and top 5 per cent firms in the industry, and the average performance of the five most similar firms based on size. The similarity of any two firms is determined by the Mahalanobis distance, which is based on total assets and total sales. The results (see Appendix G) show that the main effects of these measures are divergent. Specifically, while the average performance of the top 25 per cent or 5 per cent of firms are significant predictors of the current aspiration level, industry average performance, the average performance of the five most similar firms, and the average performance of the top 20 per cent of firms in the industry are not significant and that of the top 10 per cent of firms negatively predicts the current aspiration level. In addition, environmental variables generally do not have, or have negative, significant effects on attention to these alternative measures for social reference.

Seventh, we evaluated how environmental variables might influence different types of aspiration determination models. One frequently used and discussed alternative is the *varying parameters model*, which includes six reference points to differentiate firms performing below and above the industry median (Washburn and Bromiley, 2012). The results for the varying parameters model are reported in Appendix H. As the results in Model 2 show, past aspiration and past performance are significant predictors for firms performing above the industry median – which is partly consistent with the discussion in the literature (Washburn and Bromiley, 2012). Social reference is not significant for both groups of firms. A set of F-statistic tests suggests that the effects of three reference points do not differ for firms performing below and above the industry median. In addition, Models 3–5 show that the moderating effects of environmental variables are in general more prominent for firms performing above the industry median. This indicates that high-performing firms are generally more sensitive to their external environmental context.

We also examine the *aspiration discrepancy model* wherein the aspiration level change (current aspiration minus past aspiration) is determined based on historical aspiration discrepancy (past performance minus past aspiration) and social aspiration discrepancy

(past performance minus social reference group performance) (Mezias et al., 2002). The results (see Appendix I) show that historical discrepancy has a positive and significant effect on aspiration change, while social discrepancy has a negative and significant effect. These findings, including the negative but reasonable effect of social discrepancy, are fully consistent those in previous research (e.g., Mezias et al., 2002), supporting the credibility of our data. Furthermore, we found that in more munificent environments, organizations pay less attention to historical discrepancy. In more dynamic environments, however, both discrepancies receive more attention. In more complex environments, historical discrepancy receives more attention, but social discrepancy receives less attention. Collectively, these results indicate the significant influence of historical and social discrepancies on aspiration determination and provide hints for future research regarding how aspiration discrepancies may influence firm behaviour under different environmental conditions.

Given the high correlation between past aspiration and past performance, we further examined *separate models* for each reference point (Bromiley and Harris, 2014). The results (see Appendix J) show that in more munificent environments, organizations allocate more attention to past aspiration. In more dynamic environments, organizations allocate less attention to all three reference points. In more complex environments, organizations allocate more attention to past performance but less attention to past aspiration. These results are only partially consistent with those reported in Table III; however, we note that the separate model has limited accordance with our theorizing on attention allocated to one reference point *conditional* on the existence of the other two.

DISCUSSION

In this research, we develop an attention-based, environment-inclusive model of aspiration determination by drawing from the ABV and the BTOF, as well as their recent insights. More specifically, we examined how the environmental context shapes attention allocation among the three aspiration reference points outlined by Cyert and March (1963). We build on the notion that environmental munificence, dynamism, and complexity respectively activate the mechanisms of opportunity-seeking, certainty-seeking (uncertainty-reducing), and simplicity-seeking (complexity-reducing), which in turn regulate attention allocation rules in organizational aspiration determination. Based on a panel dataset of US firms from 2006–16, we find that in more munificent environments, organizations allocate more attention to past aspiration and social reference but less attention to past performance when determining sales aspirations. In more dynamic environments, organizations allocate more attention to past performance and social reference but less attention to past aspiration. In more complex environments, organizations allocate more attention to past performance, but less attention to past aspiration and social reference.

We also found that different aspiration dimensions, such as ROA and EPS, exhibit different attention allocation patterns under differentiated environments. More specifically, we found some consistent results between sales and ROA aspiration

determination and some other consistencies between ROA and EPS. This is not surprising given the mathematical construction of these performance metrics. Our analysis shows that sales and ROA have more consistent results regarding munificence and dynamism, while ROA and EPS have more consistent results regarding complexity. We conjecture that this could be because sales and ROA are highly internally focused measures, while EPS is more strongly focused on external financial markets; thus, sales and ROA aspiration determination exhibits more consistent attention allocation patterns in opportunity-seeking and certainty-seeking. However, ROA and EPS are profitability ratio measures that are highly influenced by competition that negatively pressures the profit space; thus, ROA and EPS aspiration determination exhibit more consistent attention patterns when responding to highly complex environments (due to the anticipated high level of competition). Moreover, our divergent results across different aspiration dimensions coincide with, and contribute to, recent observations in the literature (Bromiley and Harris, 2014); as Greve and Gaba (2017, p. 32) noted, 'the determination of aspirations may be industry, time, firm, *goal*, or decision specific' (emphasis added). Our work, together with these perspectives, may illuminate a future direction for a more nuanced theory that recognizes the heterogeneity of organizational aspiration dimensions.

Theoretical Implications

Our contributions to the behavioural aspiration literature were presented earlier in this paper and here we expand on the major implications for research. First, our investigation suggests that decision makers are attentive to their organization's external environments when determining aspirations. More specifically, drawing from the ABV (Ocasio, 1997), our work theorizes that the distinctive mechanisms of opportunity-seeking, uncertainty-seeking, and simplicity-seeking that are respectively salient in munificent, dynamic, and complex environments will regulate attention allocation rules in organizational aspiration determination. By examining these anticipated 'seeking behaviours' in different environments, our work expands the traditional BTOF by relieving its assumptions of strong cognitive constraints (Maitland and Sammartino, 2015) and sole backward-looking perspectives (i.e., adaptation based on organizations' *past* experiences) (Cyert and March, 1963). In doing so, we extend BTOF and ABV on aspiration determination by arguing that decision makers have the cognitive capability to adapt their attention to fit with the external environment. This extension echoes prior studies examining the role of managerial cognition in response to performance feedback as environmental conditions change (e.g., Barr et al., 1992). Accordingly, future research may further extend the role of ABV and managerial cognition (Gavetti, 2012; Gavetti et al., 2012) in organizational aspiration determination and more broadly in behavioural decision making. Our use of the three types of anticipated 'seeking behaviour' promoted in specific environmental contexts may provide a launching pad for future work. Aligning with the combined idea of attention and cognition, we encourage future work to extend our theorizing on an *attention-based, environment-inclusive* model of aspiration determination.

Second, our arguments and empirical evidence that organizational aspiration determination is not only informed by past experiences but are also influenced by external environments suggest that future research should carefully consider and explicitly define the context of studies. More importantly, we call on researchers to continue to more broadly expand work on the contingencies of aspiration determination in line with the work of Aranda et al. (2017), Blettner et al. (2015), Hu et al. (2017), and Berchicci and Tarakci (2022). We believe that such work will improve the explanatory power of Cyert and March's (1963) aspiration determination model and thus increase the reliability of calculated aspiration proxies for future research on aspiration consequences.

Third, our additional empirical analyses demonstrated that different aspiration dimensions, that is different performance metrics, may exhibit different relationships. Our findings suggest that aspiration determination models are generally consistent for different performance metrics; however, environmental influences on aspiration determination are highly divergent across different performance metrics and firms performing above industry averages are more sensitive to environmental influences when determining aspirations. These findings may be used to inform future research designs on aspiration consequences.

Fourth, aspiration scholars may find our empirical results on attention to social reference group performance both interesting and provocative. Our work implicitly supports Cyert and March's notion that the parameter values, including the parameter for social reference, vary across organizations. In terms of the main effects of different measures of social reference, our work suggests that a significant proportion of firms use top 25 per cent (above-the-average) or top 5 per cent peers (best-in-class) in the industry as their benchmark. However, industry median performance and all other alternative measures of social reference do not have significant positive effects or have negative effects (as noted regarding the top 10 per cent firms in the industry). This observation may help explain some of the mixed results in the literature and simultaneously supports the idea that organizations do not have universal reference groups (Ruckman and Blettner, 2022). Additionally, we found environmental complexity consistently reduces attention on these different measures of social reference. This finding implicitly supports that, no matter which reference group a firm chooses, it tends to ease their cognitive burden when determining aspiration under highly complex environments. Overall, our exploration of different social group configurations in our additional analyses demonstrates the sensitivity to the actual reference group used. While our findings may be used to inform future research designs on aspiration consequences, we add to calls for researchers to investigate the actual reference groups that firms use (Posen et al., 2018; Ruckman and Blettner, 2022).

Practical Implications

The findings of this research also have practical implications for organizational decision makers. One primary implication is that understanding the environmental context is pivotal to organizational goal (aspiration) setting. Organizations are embedded in multiple sets of environments that can, and perhaps should, influence decision making. Our findings suggest that, when setting sales goals in highly munificent environments, organizational decision makers tend to increase attention on the past sales

goal and the industry median sales performance but decrease attention on past sales performance. However, in highly dynamic environments, decision makers tend to increase attention on past sales performance and industry median performance while decreasing attention on past sales goals. In highly complex environments, decision makers only increase attention to past sales performance, while decreasing attention to both past sales goals and the industry median sales performance. To the extent that these nominal practices are established in competitive arenas, they provide suggestive guidance for decision makers for setting their organizational performance goals.

Our theorization and empirical findings also suggest that decision makers, when setting organizational goals, are not constrained to only using past experiences, but also consider the influence of external environments, which may bring varied opportunities and constraints to their organizations. Although decision makers have little control over their environment, they can adapt their attention and behaviour to fit with the environmental context. A key suggestion in the literature regarding the management of changing environments is that organizations should stay agile (Teece et al., 2016). In organizational goal setting, agility is embodied in adapting decision makers' attention allocation rules such as shifting their attention among different information sources. Such an agile attention-shifting approach may guide organizational goal setting and direct organizational efforts toward opportunity-seeking, certainty-seeking, and simplicity-seeking that are respectively salient in highly munificent, dynamic, and complex environments.

Limitations

Our research also has several limitations that deserve future research. Although we examine the most fundamental environmental variables discussed in the strategy literature, future research could consider other types of environments such as institutional environments (Levitt and Nass, 1989) and shock environments (Meyer, 1982). Future research could also investigate other contingencies that can further improve the explanatory power of aspiration determination models. For example, a review paper on organizational aspirations (Shinkle, 2012) suggests that organizational factors such as resources, capabilities, leadership, governance structure, and political structure may lead to heterogeneity in aspiration decisions. In addition, we encourage future research to examine environmental influences on a wider array of organizational behaviours and decisions to further explore the linkages between the environmental context and the BTOF. Third, given the mixed findings for different measures for social reference, we call for future research to further explore, compare, and theorize the value of different social reference terms. Finally, we call for future research to expand the generalizability of this work. In particular, we suggest more research on aspiration determination based on firms from emerging countries, firms of small and medium size, and firms with less public information where managers may view aspirations differently. Overall, we encourage the development of a more comprehensive theory on aspiration determination that not only is consistent with the original discussion by Cyert and March (1963) but also maintains empirical tractability in studies of aspiration consequences.

ACKNOWLEDGMENTS

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