ADVANCING BELONGING IN ORGANIZATIONS

AN EQUITY FLUENT LEADERSHIP PLAYBOOK

THE ROLE OF TECHNOLOGY IN ADVANCING BELONGING AT WORK

SPECIAL BRIEFING

BerkeleyHaas

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INTRODUCTION

In recent years, there has been an increase in technological tools to monitor and assess employee performance and connectivity. This is particularly true following shifts to remote or hybrid office work due to the pandemic, which provided new opportunities for data collection and digital surveillance of employees. This briefing provides an overview of technological tools—often using artificial intelligence (AI)—that are being developed and used to assess and enhance "belonging" (see Box 1). It is part of a toolkit on enhancing belonging in organizations, developed by the Berkeley Haas Center for Equity, Gender & Leadership (EGAL) found on our **belonging playbook site**. The briefing delves into trends of tools in this space—including how different tools are being used to measure and assess belonging, as well as to enhance belonging. The brief then delves into concerns for using such technologies, and recommendations for a path forward.

Key findings include:

- Existing tools in this space are primarily built to (A) measure/assess various elements of belonging, and/or (B) encourage behavior change and practices to enhance belonging.
- A majority of tools leverage AI, particularly using machine learning. These tools draw from a variety of data sources, ranging from surveys and pulses to metadata and other communications data to gauge employee sentiments and behaviors. The AI tools can also be used to map employee networks and gauge employee connectivity.
- Many of the tools that focus on behavior change use digital nudges. The degree to which they are personalized varies across tools, with some tools sending out daily inclusion tips across an organization and some tools sending reminders based on individual calendar/meeting data. The tools that are personalized use AI and draw from employee data, whereas the ones that are standard / not personalized do not necessarily use AI or employee data.
- This space is innovating rapidly—companies are exploring different types of data to collect and AI methods to employ. However, leaders must address major concerns around data privacy, bias, and more to ensure these tools are built and employed in ways that center on fairness and justice.

BOX 1. WHAT IS "BELONGING"?

Belonging is a deeply personal sense where an employee feels meaningfully connected to and a part of their organization. There are five elements of belonging, which are intertwined to amplify and reinforce each other. These show that belonging is achieved when employees feel that

- they are seen, heard, and valued as an individual in one's organization,
- their contributions are valued and respected by the organization,
- they have a sense of connectedness with colleagues,
- they have institutional knowledge to succeed, and
- they are aligned with the organization's purpose and mission.

TECHNOLOGY TOOLS FOR BELONGING

OUR APPROACH

To understand the types of tools that exist related to assessing and advancing belonging, we identified and cataloged 34 tools (see Appendix 1 for the list of tools and Box 2 for quick stats on tools cataloged). These tools vary in size and scope and were identified on the basis of their stated goals and links to key search terms such as "belonging", "employee engagement", "employee connectedness", and "inclusion". All tools seek to measure and/or enhance at least one of the aforementioned five elements of belonging. A literature review, interviews with product teams, and analysis of these tools informed the following insights and trends.

BOX 2. QUICK STATS ON TOOLS CATALOGED

Purpose & main function of tools:

- **32.3%** of the tools focus on data analytics. They collect and disseminate real-time information around elements of belonging via—or as alternatives to—surveys.
- **26.5%** focus on behavior change to help advance belonging. Behavioral tools often use digital nudges, while a few send reminders and collect feedback on e-learning and development opportunities.
- **41.2%** focus on both data analytics and behavior change. They collect / analyze different data points around belonging and use insights from that data to deliver nudges, actionable strategies for improvement, or recommendations for learning & development.

Other:

- **94.1%** are products developed as external products for sale or as features/add-ons for other business-facing products. Most tools allow clients to customize the tool, such as by picking priority topics, how often data is collected, and with whom data should be shared. The remaining 5.9% are products or HR analytic approaches developed for internal use.

INSIGHTS & TRENDS

Existing tools in this space are primarily built to (A) measure/assess various elements of belonging, and/or (B) encourage behavior change and practices to enhance belonging. A majority of these approaches and related tools are leveraging AI alongside other technology (see Box 3).

BOX 3. THE INCREASING ROLE OF AI

McKinsey Global Institute's 2021 "State of AI" survey showed that organizations globally increased investment in AI: 56% of respondents reported AI adoption in at least one function, up from 50% in 2020.[1] About 16% of respondents reported investing in AI that strove to optimize talent and performance management—which includes AI tools related to enhancing belonging in organizations.

A. TOOLS THAT MEASURE/ASSESS VARIOUS ELEMENTS OF BELONGING

Tools that measure/assess various elements of belonging collect and analyze data. More specifically, they do the following:

1. **Provide surveys and assess data:** While some tools primarily analyze existing or ongoing survey data, others provide survey templates that organizations can customize and/or automate. A couple tools (e.g., Aleria and BetterUp) provide learning and development opportunities on topics like inclusive work environments and use responses to surveys, quizzes, and activities within their workshops to gauge feelings of inclusion and belonging.
2. **Capture short pulse checks from employees' day-to-day activities:** Pulse checks are short surveys (typically 1-2 questions long) sent out periodically and randomly to employees to gauge how engaged they are feeling across a series of checkpoints. AI can help collect various data points in real time and analyze it to provide an up-to-date picture of employee sentiments, trends, and more.
3. **Use sentiment analysis with qualitative data:** Sentiment analysis—a method of Natural Language Processing (NLP)[2]—can be used to analyze responses to questions such as "what three to five adjectives come to mind when you think about…?" or "what do you think about…?". Sentiment analysis takes large amounts of text data in response to those kinds of questions and assesses whether sentiments are positive, negative, or neutral.[3] This can be used to better understand things like job satisfaction.[4]
4. **Analyze "digital traces" from existing text data as well as anonymized communication metadata:** In organizations, big data can be used to assess culture. Data can be gathered from the frequency and contents of internal communications (e.g., email, Slack messages, internal social media posts) and external communications (e.g., reviews on Glassdoor, Indeed.com). These are areas where employees express work-related perspectives/feelings. Organizations can gauge who is communicating with whom, how frequently, and when to the contents of these communications. There are also a plethora of academic and research studies that draw on digital trace data to inform understandings of organizational culture and publish findings externally (see Box 4).

BOX 4. SELECT STUDIES ILLUSTRATING HOW SENTIMENT ANALYSIS APPLIED TO DIGITAL TRACE DATA CAN BE USED TO ASSESS ASPECTS OF CULTURE AND BELONGING

- A 2015 study by researchers at IBM examined employee communications and reviews on sites including Indeed and IloveMondays.com, in conjunction with other data from the employees' organizations—e.g., retention, pay, and survey data (on culture and management).[5] The researchers scored employee sentiments as expressed on the external sites. Based on employee sentiment scores, they were then able to predict retention, work/life balance, and more.
- In a 2017 study, researchers from UC Berkeley and Stanford partnered with a mid-sized, high-tech company to analyze patterns in over 10 million internal emails exchanged over seven years.[6] They found that patterns such as the use of

personal pronouns (e.g., "I" and "we"), the degree to which employees swore, and whether or not employees adapted to their peers' cultural conventions around text conversations were all indicators of cultural fit. The researchers were able to map high levels of culture fit to more promotions, favorable performance evaluations, higher bonuses, and fewer involuntary departures.

- A 2018 study by researchers at IBM used AI to predict employee engagement using data from IBM's internal social media platform.[7] This approach captured employee engagement with a high level of accuracy. It also provided leaders with an understanding of what kinds of events or activities impacted how engaged employees felt at work.
- In 2020, researchers from McGill University, Stanford, and UC Berkeley analyzed ways that employees talked about their organization's culture on Glassdoor. With this data, they examined how diversity of ideas and beliefs impacted the companies' efficiency and innovation.[8]
- A 2021 study from MIT Sloan used NLP to analyze patterns in over 1.4 million open-text reviews on Glassdoor. The researchers were able to see how frequently employees referenced about 170 "cultural topics" such as toxic culture, job insecurity, low recognition for performance, etc., as well as how positive or negative the references were. Using this information, they were able to assess which topics could help predict a company's attrition rate, adjusted by industry, and which ones were leading predictors of employee retention.

5. **Map employee networks to gauge employee connectivity**: Network analysis uses machine learning to study communications, tasks, resources, and/or groups to understand how employees are connected. It can reveal relationships that employees have and communities they are a part of, as well as when and why they reach out to colleagues (e.g., for advice, resources, etc.). Network analysis can help reveal how these connections impact things like promotions as well. This type of information can inform mentoring suggestions, among other organizational interventions. Academic and research studies also draw on network analysis to publish findings externally about employee connectivity (see Box 5).

BOX 5. EXTERNAL RESEARCH STUDIES USE NETWORK ANALYSIS TO UNDERSTAND EMPLOYEE CONNECTIVITY

Researchers can overlay gender, race, and ethnicity data on network analysis findings to reveal new insights. In a study of 10 organizations, researchers found that Black women and Latinx men established, on average, fewer early ties and had fewer connections across functions and geographies than people in other demographic groups. The researchers were able to identify which types of network connections and behaviors were associated with faster promotions and longer tenures for employees of color.[9]

6. **Collect data related to meetings and analyze the data as indicators of inclusion.** Some tools collect and use meeting invite and participation data from people's calendars as an indicator of inclusion. Some also look at time spent in meetings or how many of those meetings are one-on-ones with managers as indicators of well-being and connectivity.

Some tools also use data from HR systems (e.g., data related to demographics, pay, roles, affinity group affiliations) to provide more nuanced snapshots of connectivity and belonging. They do this by combining the HR data with other data collected. Overlaying HR data allows tools to share the state of connectivity and belonging among teams, organizational levels, and/or identity groups.

There are various ways that insights are presented. Most often, insights are presented to organizations through interactive data dashboards with heatmaps and trend graphs. Medallia, Microsoft VIVA, and Workday's VIBE Index share aggregated data with managers. Certain tools include options to dive deeper into certain teams, demographics, etc. For example, Medallia allows organizations to organize belonging data by "personas" (e.g., for Black female managers at the organization for 5+ years). Other tools may provide overarching assessments through scorecards—such as Humu's "Inclusion Index", and PeopleHum's "Belonging and Engagement Index". Importantly, the scoring approach is unknown, so it is difficult to understand how belonging is assessed and what research the approaches are backed by. In addition to sharing aggregated data with leaders, some tools also provide employees with insights about their own behaviors. For example, Microsoft VIVA shares personal insights about time spent in meetings, connectivity, and more with individual employees.[10]

B. TOOLS THAT ENCOURAGE BEHAVIOR CHANGE AND PRACTICES TO ENHANCE BELONGING

Tools may directly enhance belonging in an organization by encouraging behavior change, often by using digital nudges (see Box 6). A majority of digital nudging tools leverage machine learning to personalize nudges based on individual communications, meetings information, and other internal data.[11] In addition, some tools encourage behavior change by prompting direct actions (E.g., matching employees with mentors). These behavior change tools are meant to serve a couple purposes:

1. **Deliver tips on different topics:** Everyday Inclusion, for example, sends out standard DEI tips daily (which may or may not be personalized or using AI). These types of tools do not necessarily use any internal data but rather send standard tips based on predetermined criteria (e.g., an organization can choose to have such a tool send out general tips around connectivity or mental health).
2. **Prompt personal learning and development:** Tools may help identify and prompt different learning and coaching opportunities for employees. For example, a nudging tool was piloted by a utility company to boost field service technicians' productivity and quality of work.[12] It assessed individuals' performance metrics to identify personalized coaching opportunities and deliver nudges. It also sent out praise to individuals who adjusted their behavior in response to the coaching provided (the tool called these "affirmation" nudges). The productivity of those who used the tool rose by 8-10% compared with a group that didn't use the tool.

3. **Prompt inclusive interpersonal workplace behavior:** The majority of tools (65.2%) prompt more inclusive interpersonal workplace behavior. These tools may directly match mentors and mentees who might not otherwise have opportunities to connect, or use nudges to prompt individuals to connect with certain employees, remind them to get feedback from certain folks, or even reflect on their own language use. These tools are personalized using data about who people are communicating with, meeting timings, meeting frequency, and other communication data.
    - An example of such a nudge is a personalized email encouraging an employee to connect with a peer in a different function or office, or a pop-up notification encouraging a manager to ask for inputs and feedback from their direct report prior to a one-on-one. Tools that encourage people to connect with one another may or may not seek to connect individuals across functions / seniority levels / offices. Importantly, not all tools with this functionality explain how opportunities for connections are identified (this is further explored in the next section on areas of concern). This is a fast-growing area—the vast majority of behavior change tools leverage digital nudges.
    - Related to tools prompting inclusive language in the workplace, **Acrolinx**, an AI-powered tool, scans written digital content (e.g., emails, Google docs) to flag language deemed not inclusive, provide information about why it can be harmful, and suggest more inclusive alternatives. Acrolinx doesn't deliver nudges automatically, but rather employees opt-in to review the feedback and choose to incorporate it.
4. **Prompt inclusive work practices specific to certain roles or functions:** Rather than interpersonal behavior change, some tools help people in certain roles or functions reflect and improve work practices to be more inclusive. For example, the **Textio for Employer Brand** AI tool scans organizations' brand and recruitment content to flag biased language and provide more inclusive alternatives. There are also tools for HR teams that flag language in job descriptions that may discourage certain people from applying (e.g., related to their gender or race).

Importantly, research on the impacts of tools that use behavioral nudges to enhance belonging and impact culture is lacking. Academic research is needed in this space.

BOX 6. WHAT ARE NUDGES AND DIGITAL NUDGES?

Nudges are indirect suggestions and positive reinforcements meant to influence people's actions and thoughts. They are based on learnings from a behavioral economics concept known as nudge theory. Digital nudges are nudges sent over email, text message, Slack, and more they can be customized and context-based.[13]

AREAS OF CONCERN

DATA PRIVACY

In the context of these tools, there are two aspects of data privacy that we focus on: (1) the degree to which employees can determine what data is being collected about them; and (2) the degree to which employees' personal data and insights from their data is protected from or shared with fellow employees and personal bad actors. Generally, tools surveyed demonstrate a range of approaches regarding these aspects of data privacy.

Aspect 1. Degree to which employees can determine what data is collected about them

For tools only collecting data via surveys and pulse checks, this aspect of data privacy is not a concern as employees are consciously filling out survey answers.

This aspect of data privacy is related to tools tracking data on day-to-day activities (including digital trace communication data, network analysis data, and calendar data, as mentioned on pages 5-7 of this document). For these tools, some allow individual employees to opt in or out of sharing day-to-day data to different degrees, while others do not. Cultivate is an example where individual users must opt in to give the platform access to all the types of data it collects (i.e., the contents of their chats, emails, and calendars).[14] Medallia also allows employees to opt in to sharing certain data such as transcripts of their calls. However, the platform also automatically collects signals from calendar and email metadata without employees having the opportunity to opt in or out. Some tools allow the organizations that buy and use the tool to determine the level of agency that employees might have when it comes to data collection. Microsoft Viva, for instance, allows tool administrators to determine if individual users are able to opt in to certain data collection.

Aspect 2. Degree to which employees' personal data and the insights drawn from this data are protected from or shared with other stakeholders

Many tools use surveys to measure/assess belonging, whether as their primary mechanism of assessment or in conjunction with other approaches. When it comes to surveys, all tools aggregate and anonymize survey responses.

For tools measuring/assessing belonging that also draw data from employees' day-to-day activities, the degree to which individual employees' personal data might be accessed by others varies. All tools have certain safeguards in place to comply with existing regulations around data privacy, which generally prevent them from sharing personal communication data about individual employees. However, even anonymized and aggregated data may be traced back to individuals. For instance, studies show that individuals can be located even in an "anonymized" database.[15] While more research is needed about the implications this can have for the tools surveyed, we have similar concerns about employees or bad actors being able to trace email and message contents back to individual employees.

The degree to which insights drawn from individual employee data are anonymized and shared varies. Microsoft Viva, for instance, states upfront that the platform only shares insights about an individual employee's behavior with that employee and not with various stakeholders like their managers. With Viva, managers only have access to de-identified and aggregated data about how collaborative and/or engaged their supervisees are. KeenCorp, which analyzes the contents of employees' email communications, explains that its algorithms anonymize individual sender-receiver details and share aggregated insights and information for pre-defined groups (e.g., accounting team or management level) with leaders, as long as the groups consist of at least 10 people or more. Some tools may share insights about individual employees with managers. Medallia, for

instance, highlights individual names and scores around topics like belonging that managers and leaders can access. For the other tools in this space, we were unable to find or confirm details about how employees' data is shared or protected beyond compliance with existing regulations.

There is little information about if and how information around employees reacting to behavioral nudges is shared. One tool, Humu, states that only information such as nudge open rates and feedback collected via pulse surveys is aggregated and shared with leadership. However, the other tools in this space do not specify whether information about how individual employees interact with nudges from their platforms is or is not shared with stakeholders.

Overall, this is a fairly new space, and companies are clearly grappling with data privacy questions. For tools that are drawing from the day-to-day activities of employees to inform insights and nudges, we have several specific concerns:

- In many cases, employees do not have the opportunity to know what data is being collected about them or the agency to opt in or opt out of what personal data is collected.
- Personal employee data like emails and other sensitive data may be potentially shared with or accessed by managers or bad actors. Even with safeguards in place, concerns remain about IT administrators being able to access individual employees' data and share it with managers or other leaders with the power to make decisions based on this data.[16]
- Insights drawn from personal data may be shared without being anonymized in some cases. While these insights can be helpful for managers to understand who may need more support in regards to topics like belonging, they could also be weaponized or used by bad actors to penalize certain folks.
- Even if information related to belonging for different demographic groups is aggregated (not revealing individual names or information), this could result in managers or leaders feeling that certain demographics do not belong as much at the organization. This may cause leaders to avoid hiring people from those groups as they may be at a higher attrition risk. This information could also be weaponized by actors to make cases that certain demographic groups do not belong at the organization.

At a higher level, we are concerned about over-surveillance conducted in the name of diversity, equity, inclusion, and belonging (DEIB). There has been a general uptick in employee surveillance in the face of the COVID-19 pandemic and the shift to remote and/or hybrid work.[17] While tools here are collecting data for the positive purpose of advancing DEIB, they can still result in unintended consequences and be weaponized. Also, while we haven't seen evidence of this in the tools surveyed, there is potential for certain groups or demographics to experience heightened over-surveillance. In the case of belonging, it's possible that workplaces would be more interested in how historically marginalized groups experience belonging and therefore focus data collection and tracking efforts on them.

LACK OF TRANSPARENCY

Transparency to employees in terms of how their data is used is also varied. When it comes to the use of demographic and HR data, tools don't specify whether they share the use of this data with the employees in question. In addition, tools that deliver nudges to encourage behavior changes have different levels of transparency built in. For instance, with Microsoft VIVA, an individual employee has access to information about where the data underlying their nudges comes from. Humu takes a similar approach using hyperlinks for each nudge with information on why the employee is receiving one—including what data points informed the nudge. This is not the case for all tools that provide nudges—a majority of them do not provide employees with this information.

BIAS

Bias can come into play at various stages within AI tools, including whose priorities are embedded into the tool, data, variables, and proxies used to build it, and the use/misuse of the tool.[18]

At a high level, having a diverse, multidisciplinary team working on researching and building AI systems is important.[19] Several tools—including BetterUp and Humu—have people (both technical and non-technical) with expertise across a variety of relevant fields, including people science and people analytics, cognitive psychology, behavioral economics, and marketing. Some teams—including those working on Microsoft VIVA and Culture Amp—also prioritize diversity in terms of identity and lived experience. However, while leadership teams spearheading work on other tools show varying degrees of diversity, little is known about the teams working on tool development.

AI systems make decisions based on data they are trained on – and this data may have bias built into it. For example, we know that women's networks in organizations are less powerful than men's.[20] [21] Research also shows that women often network with peers or lower-level employees and may miss out on networking opportunities due to caretaking responsibilities.[22] Tools risk simply bolstering existing connections and perpetuating gender gaps and trends in who is connected with whom. For instance, Microsoft VIVA suggests connections based on data from the "praise" function for employees. This implies employees are likely to be prompted to meet with peers or leaders who would be offering praise and with whom they are already connected. But who is receiving (or not receiving) praise from certain peers or leaders? How might this functionality be reinforcing existing networks and divides?

Over- or under-representation of data from certain demographics can also result in outputs that are more or less accurate for different people. For AI tools using natural language processing, the language data an algorithm is trained on is important. For instance, if an AI tool is trained on a language dataset or model that underrepresents African American English (AAE) or has instances of AAE mislabeled as erroneous/unintelligible, it is likely to misinterpret survey responses submitted by individuals who speak AAE.[23] The tools' websites / publicly shared information pieces don't share what language models they use, so we are unable to gauge the extent to which they are addressing this. However, we know that widely used large language models are trained on data composed primarily of "Standard" American English, with low representation of AAE corpora—so if these tools are leveraging these models, they may reinforce the linguistic prejudice present in the data sources.[24]

UNCLEAR RESEARCH UNDERPINNINGS FOR "BELONGING"

Lastly, concepts like "belonging", "discontent", and "toxicity" tend to be hard to quantify. It is important to consider whether or not proxy variables used to assess them are relevant measures. Not only is there a lack of standardization across tools regarding how these terms are defined and what variables might serve as signals for them, but there's also little information about the research backing individual tools' choices of variables. For instance, Medallia claims to assess "belonging" by considering whether employees take time off as soon as they earn it, or save it up. But this doesn't consider how parents may take time off differently (therefore having potential consequences for parents and particularly mothers who tend to do the majority of caretaking work) or link to any of our evidence-based elements of belonging. Another tool, Rungway, surfaces "sensitive posts" on its digital communications platform to leadership but does not share what constitutes or signals such posts. We know that posts written in AAE on social media platforms are more often inaccurately flagged as potentially harmful,[25] so this could result in greater flagging of Black people who speak AAE.

AREAS OF INNOVATION & RESEARCH GAPS

This space is growing and innovating quickly. Companies are exploring different types of data to collect and AI methods to employ. For example, voice analysis using voice data in meetings can gauge whether certain demographic groups are speaking up more than others, or are most frequently interrupted. In 2017, a team at BBC's 100 Women Challenge developed an app that would tell employees how much they spoke up at meetings. Employees were encouraged to use this information to set goals for themselves around speaking up more, or trying to talk less and support those who were often ignored during meetings. While the app was never made available for public use, it shows that this work is ongoing. AI can analyze voice and/or audio transcripts of conversations to understand the behavioral signals that link to connectivity and belonging.[27]

Some teams express excitement around using technology to further track and understand feelings like fear, safety, and vulnerability to better predict belonging.[28] [29] Text and sentiment analysis can gauge whether certain groups are consistently being left out of important communication channels, if posts and messages from privileged groups gain the most traction, and more.[30]

There are various research gaps that remain. This includes, but is not limited to:

- Are personalized tools meant to spur connectivity and inclusive behaviors doing so, or are they reinforcing certain networks and inequities?
- What are other ways these tools may be embedding bias?
- How do these tools protect data privacy in practice (or not)? What are the implications? How might IT administrators, other stakeholders, or potential bad actors gain access to personal employee data like emails and make decisions based on this data? How could this be prevented?
- What are the implications related to over-surveillance? What may be some potential consequences for different identities (e.g., related to race and gender)?
- How are insights and information provided to managers and leaders being used, and in what ways might they be causing unintended consequences that harm DEI efforts?
- How can equity, inclusion, and safety be built into how the tools are developed from the get-go?

CALL TO ACTION

Technological tools to support DEI in the workplace, including belonging, are a large—and growing—market. Despite excitement and growth in this space, concerns around data privacy, bias, and the potential for bad actors to misuse these tools are top of mind for leaders, who must think critically about these tradeoffs before investing in these up-and-coming technologies.

In our belonging work, we use "justice" as our north star. Aligned with this framing, if considering using any of these tools or if developing such tools, it is critical to ask:

- Do we have a diverse team (across different demographics and disciplines) that allow us to proactively consider how people may access and experience these tools differently?
- How might we be continuing to perpetuate inequities in terms of who is connected and networked with whom?
- How might we be having certain employees receive praise/recognition and not others? How might bias be built into this?
- How do we consider how certain employees are seen and heard within the organization and make sure that all employees have equal opportunities to be seen and heard?
- Is the tool built using sound scientific evidence that is applicable across various identities, communities, and cultures? Or is it making assumptions with potential unintended consequences?
- Have we done our due diligence to ensure equitable outcomes for all employees?
- Have we built-in robust privacy measures? Have we considered how managers or bad actors may use the tools in ways that could perpetuate bias and discrimination (on purpose or not)?

At a higher level, it is important to consider how certain power dynamics are perpetuated on teams developing these tools and on the tools themselves. It is also important to recognize that over-surveillance of employees, while it can result in data to inform decision making, is also problematic in and of itself. Lastly, more research is needed on how these tools are being used and their effectiveness to help inform the path forward.

This brief was written by Ishita Rustagi and Genevieve Smith (2022). It is an accompanying resource of the **Advancing Belonging in Organizations: An Equity Fluent Leadership Playbook** of the Center for Equity, Gender & Leadership (EGAL) at Berkeley Haas.

APPENDIX 1. TABLE OF TECHNOLOGY TOOLS

TOOL NAME	INTERNAL TOOL OR EXTERNAL PRODUCT	DATA ANALYTICS OR BEHAVIOR CHANGE	PURPOSE OF TOOL
Acrolinx	External product	Behavior change	Acrolinx offers an Inclusive Language solution as part of its AI-powered platform. This tool assesses communications within an organization and highlights language that might have discriminatory origins or might otherwise be disrespectful/harmful and explains why. It also provides more inclusive alternatives.
Aleria.tech	External product	Data analytics	Aleria aims to measure inclusion using an Inclusion Assessment to capture the day-to-day experiences of employees and demonstrate how inclusion can link to improved recruitment strategies, higher employee satisfaction, and more.
Ally.io	External product	Data analytics	Ally.io allows teams to set up OKRs using frameworks wherein they can see how their work and goals tie into the broader organization's mission and goals.
BetterUp	External product	Data analytics, Behavior change	BetterUp aims to measure and enhance belonging by: 1. Providing training/coaching for underrepresented employees to foster psychological safety, and for managers to enhance their allyship and other leadership skills, and 2. Analyzing data from these trainings to provide real-time metrics and benchmarks for belonging, diversity mindsets, and more, as well as to inform digital nudges to encourage behavior shifts needed for belonging.
Cultivate	External product	Data analytics, Behavior change	Cultivate uses AI-gathered metadata from employee communications to assess employee engagement and leadership behaviors. It then provides insights through nudges and coaching to enhance leadership development.
Culture Amp	External product	Data analytics, Behavior change	Culture Amp leverages AI to collect and analyze real-time feedback about employee engagement and specific DEI initiatives. It then delivers digital nudges in the form of "mico-learnings" to drive inclusive leadership behaviors.
CultureIQ	External product	Data analytics, Behavior change	CultureIQ provides detailed metrics and insights on data around culture. Its technology offers flexible and continuous data gathering options, highlights key opportunity areas to improve organizational culture, and nudges leaders to act on insights from the data.

APPENDIX 1. TABLE OF TECHNOLOGY TOOLS CONTINUED

TOOL NAME	INTERNAL TOOL OR EXTERNAL PRODUCT	DATA ANALYTICS OR BEHAVIOR CHANGE	PURPOSE OF TOOL
Donut	Behavior change	Behavior change	Donut integrates with Slack and provides introductions to employees across the organization and/or opportunities for employees to connect and engage in peer learning, mentorship, DEI conversations, etc.
Empuls	External product	Data analytics, Behavior change	Empuls creates a holistic platform (a "social intranet") for employee engagement that centers on recognition and positive reinforcement through digital nudges. It also helps leaders measure employee sentiment with real-time feedback.
Inclusion Scorecards | Workplace Color Spectrum	External product	Data analytics, Behavior change	Emtrain seeks to facilitate measurement and capability building around DEIB. Their Inclusion Scorecards give organizations a framework for measuring competencies such as respect, ethics, and inclusion at a point in time. The Workplace Color Spectrum aims to give employees the language to describe behaviors they experience in the workplace in terms that are "non-adversarial".
Espresa	External product	Data analytics	Espresa's platform enables behaviors linked to positive employee experiences and engagement, ranging from encouraging recognition and praise to prompting increased connectivity across the organization. It allows organizations to "gamify" recognition and other activities. It also collects real-time feedback across all its features to gauge employee engagement.
Everyday Inclusion	External product	Behavior change	Everyday Inclusion (EI) provides employees with daily, science-based "inclusion nudges". It also offers search engine functionality for employees to access research-backed information and good practices on DEI topics, definitions, and more. Organizations can also carry out inclusion pulse surveys through the app to measure inclusion and belonging and further inform the targeted nudges.
Glint	External product	Data analytics, Behavior change	Glint helps organizations gather feedback from employees using customizable pulses and surveys. It uses NLP and interactive dashboards to break down the entire organization's "health" based on data gathered. Glint also lets employees seek real-time feedback from peers and virtually "recognize" them based on performance. Managers and employees can conduct check-ins and performance reviews via the platform. Based on these, Glint provides nudges—sometimes accompanied by LinkedIn Learning content—to work on areas for improvement.

APPENDIX 1. TABLE OF TECHNOLOGY TOOLS CONTINUED

TOOL NAME	INTERNAL TOOL OR EXTERNAL PRODUCT	DATA ANALYTICS OR BEHAVIOR CHANGE	PURPOSE OF TOOL
Greenhouse (DE&I Feature Set)	External product	Data analytics, Behavior change	Greenhouse is primarily a talent acquisition solution. Its DE&I solution leverages technology to nudge interviewers and hiring managers to make evidence-based judgments and use standardizing tools like anonymized take-home tests, structured interview templates, and scorecards. It also lets organizations collect demographic data about candidates at various stages of their hiring pipeline.
Humu	External product	Behavior change	Humu turns organizational goals into personalized step-by-step support for employees across the organization's workforce, leveraging data analytics and nudges to do so.
Inclusion Nudges	Internal tool	Behavior change	McKinsey's internal opt-in Inclusion Nudges program (now an app) delivers personalized, research-backed nudges to employees that encourage more inclusive behavior and leadership. The nudges combine data with storytelling and visual elements.
Keen Corp Analytics	External product	Data analytics	Keen searches through data from employees' day-to-day workflow, using sentiment analysis to present real-time snapshots of engagement. It also includes a "KeenCorp Index" to provide an overview of engagement in the organization and find areas for improvement.
Lattice	External product	Data analytics	Lattice's platform lets organizations run various feedback and review cycles, including performance reviews, one-on-ones, and requests for continuous feedback. It also lets employees send peers praise. More broadly, the platform allows leaders to set goals and OKRs as well; direct reports can post updates and ask questions based on these and have their growth plans linked to core business competencies. It also enables organizations to collect broader feedback about culture and engagement through surveys and pulses. Analytics are available for People Leaders to see through various dashboards.
Leapsome	External product	Data analytics	Leapsome's platform provides a cohesive space for organizations to carry out performance management, gauge employee engagement, assess OKRs, and enhance learning.
Medallia	External product	Data analytics, Behavior change	Medallia combines experience management technology (pulse surveys and case management) with "listening tools" like text analysis, video, and always-on surveys across the employee journey to collect data about employee engagement. Text analytics & AI uncover trends and emerging issues based on this data, link to "suggested actions" to respond to issues identified, and automate the process of routing this feedback to the person/team best equipped to take action.

APPENDIX 1. TABLE OF TECHNOLOGY TOOLS CONTINUED

TOOL NAME	INTERNAL TOOL OR EXTERNAL PRODUCT	DATA ANALYTICS OR BEHAVIOR CHANGE	PURPOSE OF TOOL
Microsoft HR analytics	Internal tool	Data analytics, Behavior change	
Microsoft VIVA	External product	Data analytics, Behavior change	Microsoft VIVA is an employee experience platform. Its "Insights" feature gives employees, managers, and leaders personalized and actionable insights based on metadata around their meeting timings, frequency, etc. Insights provided to managers and leaders are aggregated and de-identified.
People Element	External product	Data analytics, Behavior change	People Element allows organizations to collect feedback from employees throughout the employee life cycle—from new hire check-ins to exit interviews. The platform makes engagement surveys and pulses possible and provides analytics and recommended actions based on the data collected.
People Insights Platform	External product	Data analytics, Behavior change	People Insights Platform leverages AI to collect feedback from employees through surveys and "always on listening" and transform the data into insights for business leaders around employee engagement. It also provides a platform to crowdsource employee insights on actions needed related to DEI and for employees to share 360/180 feedback with their managers.
PeopleHum	External product	Data analytics	PeopleHum is an AI and automation driven platform that allows organizations to automate parts of their hiring processes and human resource information systems (HRIS). It also enables performance management and employee conversation and connectedness on its platform and collects and analyzes around employee engagement and belonging.
Pingboard	External product	Data analytics	Pingboard is an organizational chart solution. The platform lets users view the entire organizational structure and connect with anyone, regardless of designation or role. Leaders can assign tags such as interests and skill sets to help employees get to know each other.
Quizzizz	External product	Behavior change	Quizzizz's learning and engagement platform allows organizations to create or find gamified online quizzes for "live engagement" in employee trainings and customer engagement.
Rungway	External product	Data analytics	Rungway's platform enables employees to share their opinions and concerns anonymously.

APPENDIX 1. TABLE OF TECHNOLOGY TOOLS CONTINUED

TOOL NAME	INTERNAL TOOL OR EXTERNAL PRODUCT	DATA ANALYTICS OR BEHAVIOR CHANGE	PURPOSE OF TOOL
Textio for Employer Brand	External product	Data analytics, Behavior change	Textio's Employer Brand product uses NLP to help organizations identify potentially "off-putting, exclusive, or offensive" language in their brand content (and provides reports about their overall language trends) and nudges them with context around why such language might not reflect diversity, community, and growth along with suggested language that advances inclusion instead.
The Mentor Method	External product	Behavior change	The Mentor Method lets organizations match mentors and mentees using a double-blind algorithm (patent pending) which doesn't take "orientation, status, race, job title, and age" into account. The platform allows users to schedule meetups in-person or virtually. It also allows participants to link mentorship check-ins with goals and measurable outcomes.
Turazo - Talent Retention	External product	Behavior change	Turazo's "Conversation networks" leverages ML to match employees with the right peers/leaders to have a conversation based on their needs or topics of interest. It also has an integrated scheduling tool built in and collects immediate feedback pertaining to the matches.
UInclude	External product	Behavior change	UInclude's Inclusive Writing Tool scans job descriptions for gender-biased and racially exclusive language, and nudges organizations to use more inclusive alternatives.
UKG Pro Employee Voice	External product	Data analytics	UKG Pro Employee voice helps organizations move beyond traditional surveys and leverage AI to provide real-time insights into employee experience at organizations.
VIBE	External product	Data analytics	VIBE provides organizations with insights and metrics associated with equity and belonging through a scoring system called the VIBE Index, as well as through more detailed diversity metrics on their dashboard. The dashboard also offers augmented analytics around which areas of the talent pipeline have the biggest gaps.

ENDNOTES

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