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A theory of work gamification: Something old, something new, something borrowed, something cool?

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ABSTRACT

A key assumption driving organizations' adoption of work gamification – applying principles of digital and computer games to work contexts – is that such efforts increase worker motivation, effectiveness, and performance. This paper presents a theory of work gamification, positioning work gamification as an intended enhancement of traditional performance management systems which promotes increased worker access to performance information, and improves task enjoyment. In addition to explaining why work gamification should be expected to have motivational and work effectiveness benefits, the theory also highlights the application and worker characteristics that may act as important boundary conditions to the efficacy of gamification applied to work. Theoretical and practical implications of work gamification are discussed.

Performance management systems in organizations are intended to encourage workers to achieve goals and outcomes consistent with the organization's objectives (Aguinis, 2009; Gruman & Saks, 2011). At the most fundamental level, performance management systems seek to improve worker performance via two distinct but related paths: increasing worker access to performance information (e.g., identifying performance requirements, setting achievable and measurable goals, providing feedback on goal progress), and energizing worker behavior (e.g., providing incentives for goal attainment [Aguinis & Pierce, 2008; DeNisi & Pritchard, 2006]). Though the importance of performance management systems has been recognized for quite some time (Beer, Ruh, Dawson, McCaa, & Kavanagh, 1978), the digital age has significantly expanded performance management capabilities (Folan & Browne, 2005). This paper focuses on the latest technology-embracing approach to performance management: work gamification.

Work gamification is about applying game features in the work context to improve worker performance (de Marcos, Domínguez, de Saenz, & Pagés, 2014; Hamari, 2013; Papastergiou, 2009). In some ways, work gamification represents both something old and something new with respect to performance management. Something *old* is the value of providing performance information to direct and correct worker performance (e.g., Locke & Latham, 1990; DeShon, Kozlowski, Schmidt, Milner, & Wiechmann, 2004). The *new* twist on providing performance information is that gamification offers real-time – possibly continuous – access to performance information. We refer to this as the information pathway to work motivation and effectiveness afforded by gamification. However, instead of relying only on more frequent access to performance information, work gamification also seeks to make work more intrinsically motivating, by making the process of work itself more rewarding.

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Thus, work gamification is supposed to be more than performance management with a shorter time lag. Work gamification does this with something *borrowed* – it borrows features from video games (e.g., social salience and comparability of performance information) to create something *cool* – namely tasks that are more game-like, and thus more enjoyable (Yee, 2006). We refer to this as the affective pathway to motivation provided by work gamification. (See Table 1 for a summary of how and when the old, new, borrowed, and cool aspects of work gamification should enhance traditional performance management systems.) Given these intended benefits, gamification can be seen as using technology to create real-time access to performance information (the *what* to do), as well as make tasks more enjoyable (the *want* to do).

Work gamification represents a growing movement in performance management, with the gamification industry anticipated to be worth $5.5 billion by 2018 (Dale, 2014). However, it has been projected that 80% of current gamification applications will fail to meet their business objectives (Dale, 2014). This is because despite its growing popularity in organizations (Donston-Miller, 2012; Schawbel, 2013), how, why, and when work gamification enhances worker motivation, effectiveness, and performance remain unclear, as do the potential challenges associated with making work more "game-like." This paper articulates a theory of work gamification that explains how gamification uses technology to revolutionize performance management. In particular, we present a theoretical model of work gamification that demonstrates how, when, and why it may enhance worker motivation, effectiveness, and performance, and articulates the application and worker conditions that should condition the efficacy of work gamification in organizations.

1. Foundations of gamification

Gamification means that game features are "embedded into activities that are not themselves games" (Werbach & Hunter, 2012: 27). It is increasingly common to see gamification applied to non-game contexts, including education, marketing, and more recently work (Dignan, 2011; Domínguez et al., 2013; Hamari, Koivisto, & Sarsa, 2014; Papastergiou, 2009). At its essence, work gamification frames work in the metaphors, language, and features of digital and computer gaming (Bunchball, 2012). However, work gamification does not mean changing work into a game; rather, it involves using game features to direct and energize desired worker behavior. Game features commonly associated with gamification include points, levels, badges, leaderboards, and character sheets (Dale, 2014; Kapp, 2012; Maciuszek & Martens, 2012; Zichermann & Cunningham, 2011). This section describes these core game features associated with work gamification, and provides illustrations of how they are used in games and in work.

Game features such as points, badges, and levels are frequently used in work gamification (Flatla, Gutwin, Nacke, Bateman, & Mandryk, 2011; Kapp, 2012). In games, points and levels can be accrued for the performance of specific tasks important to the ultimate goals of the game (e.g., rescuing the princess, finding the treasure). Achievement badges and the ability to "level up" are provided for displaying competence or mastery in a certain area (Simões, Redondo, & Vilas, 2012). By accruing points, leveling up, or earning a badge, players accomplish small, easily achievable short-term goals that represent progress toward the accomplishment of challenging, distal goals, and show worker capability (Kapp, 2012). For example, *World of Tanks* (a multiplayer online game that involves fighting battles with customized tanks) players can earn "mastery badges" for demonstrating skill at controlling an armored vehicle, or "epic badges" for showing extraordinary skill during battle. In *Super Mario Brothers*, players earn points by defeating enemies or collecting coins.

Companies have applied points, badges, and levels to work in several ways. The consulting company Badgeville offers an off-the-shelf service with customizable options that companies can use to configure any type of goal specific to their industry (e.g., completing expense reports, learning new skills, and knowledge sharing, [Badgeville, 2013]). SAP Software Solutions provides an application – *Roadwarrior* – where sales representatives can level-up for top performance with customers. Some companies also award achievement badges for worker accomplishments; at IBM, Kudos Badges are earned in association with performance metrics established by the company (ISW, 2013). These game achievements – points, badges, and levels – are generally tied to specific and immediate rewards. At Samsung, points earned can be redeemed in a mobile storefront containing real-world rewards – such as exclusive deals or gift cards – or donations can be made to a favorite charity (Donston-Miller, 2012).

Table 1
How and when work gamification enhances traditional performance management systems.

	Enhancement of performance management		
Pathway	Traditional	Gamified	Boundary conditions
Informational	Access to performance information	Access to more visible, comparable, and immediate feedback	WORKER: Some people will benefit more • Competitive traits • Performance level
Affective	Efforts to make work more intrinsically motivating	Use game-features (from video-games) to make work tasks more enjoyable	APPLICATION: Some applications will be more beneficial • Middle-term • Self-managed

Additional game features include leaderboards and character sheets. Leaderboards are lists of top scorers in the game (Rauch, 2013). Character sheets, like a resume, are linked to a player's character (or avatar) in the game, and display the player's status, skill, and past accomplishments (Maciuszek & Martens, 2012). As a player progresses through the game, the points his/her character accrues are represented on the leaderboard, and items and experience gained can be displayed on the character sheet. Leaderboards and character sheets thus provide mechanisms through which individual achievements can be immediately and continuously displayed for the self and others in the game to both see and act upon (Zichermann & Cunningham, 2011). In this way, these game features offer readily accessible information on a player's standing, skill, and competence both independent of, and relative to, others in the game. For example, in *FarmVille* (an online farming simulation game) players complete monthly tasks to climb the leaderboard. In *World of Warcraft* (another popular massively multiplayer online role-playing game that involves completing quests) players create custom avatars that visibly evolve over time as players acquire new avatar regalia, skills, and tools. These avatars are then displayed on each player's character sheet as a demonstration of a player's status, experience and capability.

Several companies use leaderboards in connection with sales or customer service outcomes. For example, the pharmacy software company, Omnicare, created a visible leaderboard for customer service representatives (Gaskell, 2013). Character sheets, applied to work gamification, can take the form of Facebook-like platforms or dashboards which display a worker's profile, including points earned, points to next level, skills acquired, badges earned, current challenges, and more (Herzig, Ameling, & Schill, 2012). For example, Nitro for Salesforce compiles data and displays it on Salesforce.com where workers can see their achievements, as well as those of other workers (Bunchball, 2012). At Accenture, the Technology Labs Liquid Workforce uses character sheets to display expertise, and to find suitable experts from anywhere in the organization to tackle a specific project, task, or problem (Bunchball, 2013).

To summarize, game features – points, levels, badges, leaderboards, and character sheets – form the basic building blocks of work gamification. In the next section, a work gamification framework is articulated. The framework explains the effects of these foundational game features on work motivation and effectiveness – via access to performance information and task enjoyment – and highlights the application and worker characteristics that should condition the effectives of work gamification.

2. A theory of work gamification

Work gamification can be thought of as an approach to performance management that uses technology to create *real time* access to performance information and make tasks more enjoyable. We begin by describing performance management "game changers" – key mechanisms through which gamification improves employee motivation and effectiveness. As noted, our framework suggests that work gamification works via two primary pathways: an informational pathway and an affective pathway. From an informational perspective, work gamification provides workers with more timely access to the sorts of performance information known to be associated with motivation and learning. From an affective perspective, work gamification increases enjoyment by making tasks feel more "play-like." See Fig. 1.

2.1. Game changers: informational and affective benefits of work gamification

From an informational point of view, work gamification improves the visibility, comparability, and immediacy of performance information. In this way, work gamification makes it easier for workers to get feedback on how they are performing, how their performance compares to others, and whether they need to make corrections in performance. With respect to the increased *visibility* of performance information – via character sheets, leaderboards, point tallies, and badges earned – performance feedback is readily accessible and salient to workers, allowing them to continuously "know their score" and to have a greater understanding of how they are doing relative to expected or desired performance standards. Because gamification uses technology to provide performance information to workers (Dale, 2014), it gives workers the opportunity to receive clear feedback about their performance even without having to interact with others (e.g., supervisors, peers). When workers have clarity about their performance and whether it needs to be improved, that should motivate them to reduce the discrepancy between actual and desired performance (Ashford & Northcraft, 1992). SAP Community Network applies this principle by aggregating points employees earn for completing tasks – such as answering questions on forums or submitting whitepapers – and displaying them on a lifetime leaderboard visible to all employees.

The fact that workers can earn points and badges, top the leaderboard, and display their achievements on their character sheet means that worker performance information is not only more visible to workers themselves, but also visible to other workers. Thus, another motivating mechanism of work gamification is that it allows workers to easily compare and contrast their attainments and performance with those of others. We refer to this as *comparability* – workers' ability to receive feedback on how their performance and progress compares with that of other "players." Social comparison theory (e.g., Festinger, 1954; Suls, Martin, & Wheeler, 2002) suggests that information about others' performance compared to one's own can motivate people to improve their own performance. This is because one important function of social comparison is self-evaluation (Sedikides & Strube, 1995). Through social comparison, individuals gain important information about their progress toward goals, which helps direct their behavior and improve motivation. Illustrating this principal, enterprise gaming tools, such as *Yammer*, allow companies to leverage such social comparison by helping companies to display employee achievements via social media so they can be seen throughout the company. Importantly, comparability also applies to individuals' ability to compare their current performance with their own past performance. This form of intra-individual comparability – like social comparability – can

provide information about personal progress and capability and/or show employees where their performance needs to be improved (Ashford & Northcraft, 1992).

Additionally, work gamification improves the *immediacy* of performance information by providing a vehicle through which individuals can experience timely – even real-time – feedback. Through points, badges, and other game features, workers achieve performance goals and receive immediate information about their goal accomplishments. At work, a sense of goal progression can often prove elusive (Northcraft, Schmidt, & Ashford, 2011) – goals are frequently too distal for workers to experience goal achievement on a regular basis. Game features reflecting work-related goals help remedy this problem by making the experience of feedback about goal accomplishment a daily or hourly (almost continuous) sensation for workers. In this sense, work gamification makes the power of feedback more available to workers. Thus:

Proposition 1a. *Work gamification improves work motivation (and subsequent performance) by providing workers with increased access to visible, comparable, and immediate performance information.*

The preceding arguments explain why work gamification should be expected to stimulate employee motivation. However, not only do employees need to be motivated, they need to be motivated to do the *right* things at work. While work efficiency is about "doing things right," work effectiveness captures the extent to which employees are "doing the right things" – i.e., the extent to which targeted goals and objectives are achieved (Porter, Lawler, & Hackman, 1996). Our theory suggests that work gamification should affect work effectiveness via enhanced opportunities for employee learning and adaptation. Research on learning-intensive work shows that opportunities for feedback, and access to information and evaluation about the outcomes of work are considered critical for learning to occur (Frese & Zapf, 1994; Landsbergis, Cahill, & Schnall, 1999). Because work gamification provides employees with access to more visible and immediate feedback about their performance at work, it should facilitate adaptive forms of learning. Through gamification, performance information is readily accessible and salient to workers. This allows them to have a greater understanding of both what the performance standards are and how they are doing with respect to achievement of these standards – as compared to their own performance in the past and to others' performance. It is through this type of information that workers learn about work requirements, improve their understanding of work tasks and situations, or identify unintended or unexpected consequences of their previous efforts (Edmondson, 1999). All these forms of work-based learning improve employees' ability to engage in the right behaviors at work (Ellström, 2001).

It is important to note that performance information provided by work gamification may be less helpful for identifying *reasons for* performance mistakes or providing corrective feedback. For example, a worker may learn that s/he didn't earn an achievement badge, but may not know *why* this was the case. Thus, work gamification may be less helpful in improving work efficiency – "doing the thing right" if workers don't know how to improve performance. Nevertheless, by providing employees with visible, comparable, and immediate feedback about their performance relative to a standard, work gamification should help individuals to make assessments about the need to change their work behavior and performance, and may thus encourage them to take personal corrective action in response to broad indicators of work effectiveness. Thus:

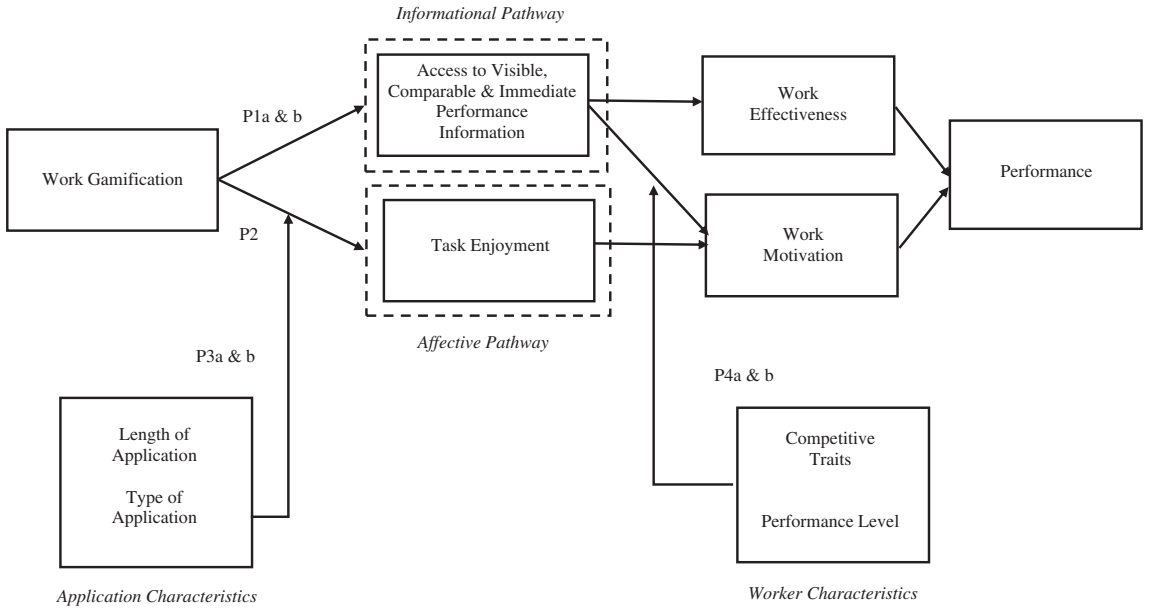

Fig. 1. A theory of work gamification.

Proposition 1b. *Work gamification improves work effectiveness (and subsequent performance) by providing workers with increased access to visible, comparable, and immediate performance information.*

The second pathway through which work gamification is likely to yield motivational benefits is the affective pathway (see Fig. 1). When performing a task, workers want to have the ability to reduce discrepancies between desired and actual performance – but they also want to feel good while engaged in their tasks (Raynor & McFarlin, 1986). Just as research on "turning work into play" has suggested that defining a task as "play" can increase the enjoyment of tasks (Csikszentmihalyi & LeFevre, 1989; Sansone, Sachau, & Weir, 1989), our model suggests that adding game features to work may also improve task enjoyment. Task enjoyment refers to peoples' experience of tasks as pleasurable, and is related to experiences of joviality and happiness (Deci & Ryan, 2000; Green, Reid, Passante, & Canipe, 2008). According to our framework, work gamification fosters greater task enjoyment via sense of accomplishment and worker engagement.

Sense of accomplishment refers to an employee's experience of making progress in his or her work (Amabile & Kramer, 2011a). Though a feeling of progression can often be elusive at work (Northcraft et al., 2011), work gamification makes the power of accomplishment more available to workers. New levels, higher scores, movement on the leaderboard, or earning a new badge all provide employees with "small wins" (Amabile & Kramer, 2011b), a clear and immediate sense of accomplishment which can occur daily or even hourly. Because gamifying work provides a vehicle through which employees can track their progress every time they "play," employees should experience a greater sense of accomplishment. At SAP, introducing progress bars and levels helped give data cleaners a sense of their daily (even hourly) progress, an important addition given that the ongoing nature of the data cleaning task could make it feel endless to employees. The opportunity to experience a sense of accomplishment is associated with more positive mood and more joyful experiences of work; when people feel a sense of accomplishment, they experience tasks as more enjoyable (Manderlink & Harackiewicz, 1984). Moreover, accomplishments need not be large for workers to experience the enjoyment associated with goal progression (Amabile & Kramer, 2011b).

Another critical feature of work gamification linked to task enjoyment is its potential to foster engagement. Reduced to its essence, a game is "a problem-solving activity approached with a playful attitude" (Schell, 2008: 37). Because gamification is by definition "play-like," proponents have argued that it should help make tasks more enjoyable by making them more engaging – promoting a sense of vigor, dedication, and absorption from employees (Salanova, Schaufeli, Xanthopoulou, & Bakker, 2010; Schaufeli & Salanova, 2007). Numerous studies have linked engagement to work motivation and performance via positive emotion (Bakker & Bal, 2010; Bakker & Demerouti, 2008).

Cook (2013) notes that "gamification creates a virtual world where you can be productive and still have fun" (p. 23). The appealing visual layouts of character sheets and leaderboards, and the thrill of racking up points and badges connected with performance all evoke greater engagement in work tasks (Cockton, 2002; van der Heijden, 2004). Researchers have referred to such features of systems that improve workers' affective experience as "hedonic systems" (Hirschman & Holbrook, 1982; Sun & Zhang, 2006). Hedonic systems provide affective value internal to the interaction between user and system, thereby promoting a sense of fun (Lin & Bhattacherjee, 2010; Huang & Liaw, 2005). Users' interaction with the system – in this case, work gamification features – energizes worker behavior and dedication to the task because it is associated with pleasure (Trepte & Reinecke, 2011; Venkatesh, Speier, & Morris, 2002). As illustrations of this, companies have adopted *ChoreWars* applications where employees compete to complete mundane work tasks. Having the chance to create characters and complete "missions" makes boring tasks more engaging. DevHub implemented gamification in association with the more tedious tasks that their employees tended to avoid or procrastinate on. Points and progress bars incentivize employees to persist by making these tasks seem more enjoyable.

Proposition 2. *Work gamification improves work motivation (and subsequent performance) by fostering greater task enjoyment.*

2.2. Boundary conditions to the effectiveness of work gamification

In addition to identifying two main pathways – informational and affective – through which work gamification exerts an influence on work motivation and effectiveness, our theory of work gamification illustrates several boundary conditions to the efficacy of gamification in the workplace. In particular, the efficacy of work gamification should be qualified by specific application and worker characteristics. These characteristics exert effects on either the informational or affective pathways connecting work gamification to worker motivation and effectiveness (see Fig. 1).

2.2.1. Application characteristics

Two important application considerations for the effectiveness of gamification concern how long work is gamified (length of application) and what work gets gamified (type of application). Length of application and type of application concern how work gamification gets applied in the workplace. Both should qualify the effect of work gamification on workers' experience of work enjoyment (see Fig. 1).

Research suggests that leisure games are enjoyable, in part, because they are volitional (Koivisto & Hamari, 2014). Individuals have agency and choice in whether or not to play *World of Warcraft,* as well as in the tasks and goals they associate with the game. In the same vein, a central hallmark of leisure games is that players can play a game for a while, then put it down; the player always has the choice to walk away from the game (Crookall, Oxford, & Saunders, 1987). When the game gets boring, when one has mastered enough levels, or it becomes too challenging to be enjoyable, an individual can always find another

game that suits their needs. In a gamified work system, workers may not always have agency and choice in what gets gamified, and they likely can't choose to quit the game when it ceases to be interesting (Crookall et al., 1987). Thus, if players lose interest in gamified work, it should cease to be as engaging (Yun, 2010).

Along these lines, Farzan et al. (2008) found that the effects of gamification features decrease over time due to the diminishment of novelty effects. Similarly, Koivisto and Hamari (2014) found that gamification engagement tends to diminish over time, signifying that the novelty value of gamification may fade into boredom the longer the user is involved with the gamified system. This suggests that while the novelty of work gamification may excite and engage workers at first, interest may decline with time. Indeed, the time-limited appeal of many digital games has been recognized – they are fun for a time until the initial novelty wears off and then individuals switch to another game (O'Donnell, 2014). Game players may play a game obsessively until they are "played out" and then become enthralled in a new game. Because engagement in the game is critical to what gives gamification its impact, when the "game" ceases to be interesting and novel, work gamification loses its value.

The preceding evidence suggests that gamification might work best for short time horizons, before individuals have time to tire of the game. However, implementing work gamification can represent a big investment (Deterding, Sicart, Nacke, O'Hara, & Dixon, 2011). Platforms need to be established, metrics set, and workers educated on the use of the game. Thus, if the length of application is too short the benefits may not justify these substantial costs. Accordingly, work gamification may be best used for "middle-term" applications – applications that are not so long that workers lose interest, but long enough for employers to recoup their investment. In such cases, the length of application justifies the start-up cost, but doesn't give workers time to become bored with the game. These middle-term applications could be for situations with a medium length performance time horizon or for which individuals are accomplishing sub-goals related to a larger, more distant task outcome (Druskat, 2000). Examples may include a product launch, a project deadline, or a sales competition. Work gamification may also work well for training, where employers can use the application for a longer period of time but with constantly changing groups of workers. For example, Domino's has turned its pizza-making training into a web-based game with points, achievements and levels. These examples suggest that gamification might be best applied to (a) work with an identifiable time horizon, (2) the accomplishment of sub-goals associated with more distal goals and final task outcomes; and/or (3) situations with changing groups of workers. These features associated with middle-term applications should increase the likelihood that gamified work content can be unique for each new application, and should thus make it easier to sustain levels of enjoyment and engagement associated with work gamification. Thus, we predict the following:

Proposition 3a. *The positive effect of work gamification on task enjoyment will be strongest for middle-term applications.*

In terms of application type, work gamification should have a stronger effect on worker task enjoyment when it is self-managed. Although much of the work gamification efforts seen in organizations are initiated by managers, numerous software applications provide opportunities for workers to gamify their own work. For example, *Werdsmith* is an app that allows writers to set writing goals, keep track of their progress, and compare it with the progress of others in their network. *Thoughtree* is an app that allows users to track and organize their ideas, and either keep them private for personal use or share them with others in their social network. Such applications can be selected by (offered to) workers based on their assessments of where their performance and productivity needs to be improved.

When employees are self-managed, they have autonomy in how they organize and carry out their work (Thoms, Moore, & Scott, 1996). Given the importance of self-determination in worker motivation (van Beek, Hu, Schaufeli, Taris, & Schreurs, 2012), and the importance of employee autonomy and discretion over work processes or work-related choices (Humphrey, Nahrgang, & Morgeson, 2007), encouraging workers to gamify their own work (and update when necessary) in the form of applications that are tailored to their on-going work and productivity needs could help enhance the effect of work gamification on task enjoyment. When games are self-managed they may be more likely to foster a sense of autonomy and control, and should be more easily tailored and changed to meet the needs and interests of workers. In turn, task enjoyment should increase as employee control and autonomy over what gets gamified is increased. Just as recent research suggests that workers experience work more positively when they exercise considerable creativity and initiative in crafting their work (Wrzesniewski & Dutton, 2001), workers may similarly benefit when organizations take a bottom-up versus top-down approach to work gamification. This is in line with what game design experts have suggested – that good gamification design should be user-centric not mechanism-centric (Dale, 2014). Thus:

Proposition 3b. *The positive effect of work gamification on task enjoyment will be stronger as opportunities for self-managed gamification increase.*

2.2.2. Worker characteristics

Because different workers react to the same accountability systems differently (Ferris, Munyon, Basik, & Buckley, 2008), there are likely to be individual differences in motivational responses to work gamification as a performance management tool. Accordingly, characteristics of workers themselves should be consequential to the effectiveness of gamification. Two worker characteristics likely to moderate the positive effect of increased access to visible, comparable, and immediate performance information on work motivation are competitive traits and performance level (see Fig. 1).

From a trait perspective, studies have identified a collection of traits associated with the tendency to engage in, or prefer, competitive situations and behaviors. These include traits such as the Type A pattern, achievement motivation, and trait

competitiveness (Glass et al., 1980; Spence & Helmreich, 1983; Spurk, Hirschi, & Kauffeld, 2015). Those with Type A patterns have been shown to be more responsive to cues indicating potential failure on a task, reacting with intense and persistent effort to succeed or avoid failure (Glass et al., 1980). Those with high achievement motivation compete with a standard of excellence, striving to do things as well as possible (Elliot & Church, 1997; McClelland, 1961; Thrash & Hurst, 2008). Social comparison and the ambition to outperform others play a central role in achievement motivation (Elliot & Church, 1997). Trait competitiveness is based on achievement motivation research and refers to an aspect of personality characterized by "the enjoyment of interpersonal competition and the desire to win and be better than others" (Spence & Helmreich, 1983: 41). Those with high trait competitiveness prefer work environments with high levels of competition (Houston, Farese, & La Du, 1992; see also Kohn, 1992).

For individuals with strong competitive traits, the relationship between the visible, comparable, and immediate performance information provided by work gamification and work motivation should be strongest. For these individuals, being in a work environment that allows them to "know their score" personally, and as compared to others, should be most motivating. For competitively-oriented workers, awareness of how past performance compares to present performance, and that their performance will be visible and compared with those of their peers, is likely to increase their motivation to perform in order to demonstrate capability, exceed achievement standards, outperform others, and/or avoid negative performance evaluations made by others (Brown, Cron, & Slocum, 1998; Epstein & Harackiewicz, 1992; Reeve & Deci, 1996).

In contrast, for workers low on competitive traits – such as the Type A pattern, achievement motivation, or trait competitiveness – continuous monitoring and display of worker performance information should be less motivating. Indeed, the increase in perceived (and real) performance monitoring and feedback may foster heightened evaluation apprehension by workers with low trait competitiveness. Evaluation apprehension is a form of stress stemming from one's level of performance concern, and associated with unease introduced by critical observers (Seta, Crisson, Seta, & Wang, 1989). Because the stakes associated with work-related performance are generally high (Spector, Dwyer, & Jex, 1988), evaluation apprehension may be increased if workers not oriented toward competitiveness are unremittingly focused on their performance, and have an awareness that their performance is both continuously tracked (in the form of points, badges, levels, etc.), and visible to others (in the form of leaderboards and character sheets [Bates & Holton, 1995]).

Workers low on competitive traits might also respond to work gamification with a lack of interest or indifference to the comparability afforded by game features. Because they are not motivated by competitive situations and behaviors, they may be less likely to respond to cues indicating potential success or failure on a task or goal, or to have the ambition to outperform others (Glass et al., 1980; Spence & Helmreich, 1983; Thrash & Hurst, 2008). Thus:

Proposition 4a. *The positive effect of increased access to performance information on work motivation associated with work gamification will be stronger (weaker) for workers high (low) on competitive traits.*

Just as workers are likely to have varying levels of competitiveness, worker performance levels naturally vary in organizations. Moreover, workers with different performance levels are likely to be differently motivated, in general and in response to the display of visible, comparable, and immediate performance information. Expectancy theory (Vroom, 1964) identifies three factors that play an interactive role in motivation: the link between effort and performance (expectancy), the link between performance and outcome (instrumentality), the attractiveness of the outcome (valence). While high performers prefer situations where the effort-performance and performance-outcome relationships are clear and strong, lower performers prefer contexts where these relationships are weaker (Harrison, Virick, & William, 1996). Moreover, employers who are not higher performers – who are likely to represent a large segment of the workforce (Lepak & Snell, 1999) – should be less motivated by having their performance information acquired and displayed in real time. For these workers, being persistently seen as average or even low performers may weaken two of the three important links in expectancy theory – expectancy and instrumentality. Repeated reminders of lower performance levels may reduce one's sense that good performance (e.g., topping the leaderboard) is possible (expectancy), and/or that one can access the recognition and rewards associated with such performance (instrumentality). Taken together, this evidence suggests that the increased access to performance information associated with work gamification may motivate primarily the already comparatively motivated higher performers, while having a less positive effect on lower performers, those whom employers are likely to be most interested in motivating. Thus:

Proposition 4b. *The positive effect of increased access to performance information on worker motivation associated with work gamification will be stronger (weaker) for workers with higher (lower) performance.*

3. Discussion

While increasing numbers of companies are adopting work gamification, and the potential benefits of work gamification are often touted (Dale, 2014; Hamari, 2013; Huotari & Hamari, 2012; O'Donnell, 2014; Werbach & Hunter, 2012), researchers have not yet articulated a theoretical framework for understanding how, why, and when work gamification influences work motivation and effectiveness. The framework presented here makes it clear that, with respect to existing theories of performance management, work gamification can be thought of as something old, something new, something borrowed, and something cool. While it has long been understood that providing performance information can help managers direct and correct worker behavior toward performance goals and aid employee learning, gamification offers real-time – possibly continuous – access to visible, comparable, and immediate of performance information. In the framework presented here, this represents the informational pathway

through which work gamification has the potential to enhance work motivation and effectiveness, above and beyond existing performance management systems. Additionally, work gamification borrows game features from digital games to make tasks more enjoyable by making them feel more game-like, and thus more fun. In the framework, this represents the affective pathway through which work gamification enhances worker motivation. Moreover, the framework suggests that the effectiveness of work gamification should be qualified by application characteristics (length and type of application) and worker characteristics (competitive traits and performance level).

Our work gamification framework provides contributions to the existing literature on work gamification, performance management, and work motivation. While there has been little theoretical research on the effectiveness of work gamification, the research that has been done has tended to focus almost exclusively on the potential benefits of work gamification (Deterding et al., 2011; Hamari, 2013; Huotari & Hamari, 2012; McGonigal, 2011; Werbach & Hunter, 2012). This research has also operated largely under the assumption that the motivational impact of gamification should directly translate to a work context. Our model highlights the pathways through which work gamification improves work motivation and effectiveness, and the characteristics that are expected to influence when gamification is likely to be the most effective. In particular, the potential for work gamification to enhance worker motivation should be strongest when applications are "middle-term" – i.e., not too long such that workers lose interest, but long enough that employers recoup their investment in setting up a gamified system – and when work gamification is at least partially self-managed. As well, the motivating potential of increased access to visible, comparable, and immediate performance information should be most beneficial when workers have strong competitive traits, and least beneficial for average or low performing workers. In articulating these qualifying conditions, the theory of work gamification presented here provides a testable model with which to advance empirical and theoretical knowledge on how, why, and when work gamification improves worker motivation and effectiveness.

Our theory of work gamification offers important insights to the performance management literature. Past research has suggested that performance management should be linked with clear objectives tied to organizational strategy and connected to worker feedback (Aguinis, 2009; Aguinis & Pierce, 2008). Our model highlights how, why, and when work gamification may improve the strength of existing performance management systems by enhancing the visibility, comparability, and immediacy of performance information, and making work tasks more enjoyable. Existing research on performance management systems provides little insight into the potential dynamics of providing real time feedback to workers, and provides even less insight into attempts to make performance management systems more "fun" through the use of performance management technologies such as work gamification. Our model offers an initial step toward mapping out how and why work gamification might enhance existing performance management systems and considering the conditions under which gamification is most likely to have such beneficial effects.

Our theory of work gamification also offers insights for theories of work motivation in at least two ways. First, the touted benefits of work gamification likely reflect its grounding in existing motivational theories related to goal achievement and feedback (Locke & Latham, 2002), social comparison (Festinger, 1954), and work enjoyment (Deci & Ryan, 2000). However, while discussions of motivation have been at the core of conversations about the utility of gamification (Deterding et al., 2011; Hamari, 2013; Huotari & Hamari, 2012), there has been little in the way of comprehensive theorizing about how, why, and when work gamification affects motivation, and even less discussion of the factors that qualify its motivational effects. Our model extends previous research by explaining how motivational benefits may accrue, as well as when they may fail to be realized. Past research has provided evidence that the benefits of novel early worker experiences can often diminish over-time (Boswell, Boudreau, & Tichy, 2005). Similarly, our framework suggests that the gains in motivation associated with work gamification could taper off or fail to realize their intended benefit in some work contexts, and explains the application and worker characteristics that inform work gamification's effectiveness.

Another contribution to the work motivation literature offered here is that work gamification may represent a novel approach to work design, whereby game features are over-laid onto existing task structures and experiences. Work design theory and research most often deals with the reality and perception of how work is structured, organized, experienced, and enacted (Humphrey et al., 2007). While existing theories of work design provide evidence of the importance to worker motivation of factors such as task characteristics of work (e.g., variety, complexity) and social characteristics of work (e.g., social support, contact with beneficiaries [see Grant, Fried, & Juillerat, 2011 for a review]), our theory of work gamification suggests that motivation can be improved not by changing the task and social parameters of the work, but by making performance information more salient to workers and work tasks more enjoyable through the application of game features to work. This suggests a modern twist on work design that is in step with the wide use and popularity of digital games in the general population. According to a recent Entertainment Software Association survey (2011), 72% of American households play digital games. This statistic hints at the fruitfulness of building additional theory around why, how, when, and where work gamification may provide an effective complement to traditional work design.

Our theory suggests areas for additional elaboration through future research. Though we identified some factors that may enhance or diminish the effectiveness of work gamification, more attention could be paid to conditions and challenges of implementation. As suggested by the performance information mechanisms in our model – visibility, comparability, and immediacy – the success of work gamification seems dependent on the ability of an organization to provide "real time" feedback to its workers concerning their objective achievements in the workplace. However, a critical implementation issue with respect to such feedback is that organizations adopting work gamification need to be very clear about performance requirements connected to game features, as well as how workers can meet these requirements. For example, organizations need to have specific performance criteria for moving from level three to level four or for earning points. Only then can workers know specifically what they are being

evaluated on and feel that their good effort translates into success (Bandura, 1982; Deci, 1972; Vroom, 1964). Because of this need for clear performance criteria, work gamification may be best suited for tasks with highly objective performance criteria – i.e., "direct measures of countable behaviors or outcomes" (Bommer, Johnson, Rich, Podsakoff, & MacKenzie, 1995: 588). The need for objective performance criteria, combined with our arguments linking work gamification to work effectiveness, but not necessarily work efficiency, further suggest that work gamification may be most effective when performance is mostly a function of *want* to do and less a function of *what* do to (i.e., when what to do to improve performance is more obvious because of objective criteria), and/or in cases where motivating a worker to personally search for corrective action is likely to prove successful.

Additionally, for an organization to get from comprehensive specification of worker goals to achievement displays of worker progress toward those goals requires the collection, compilation, and continuous updating of points, levels, leaderboards, and character sheets. While the availability of software platforms (e.g., Bunchball, 2013; Badgeville, 2013) now makes this easier for organizations to do, important collection and compilation questions remain particularly when, as noted, performance measures are not always objective (e.g., team morale rather than sales revenue), and the collection and compilation of those measures cannot always be automated (i.e., the measures cannot be farmed from already existing objective organizational processes, such as accounts receivable). The path of least resistance in addressing this challenge could quickly become focusing on what's easy (rather than what's important) to collect and compile (Longenecker, 2005). Under those circumstances, gamification could be subject to the same lapses and lack of accountability associated with traditional performance evaluation systems (Ferris et al., 2008). In this case, gamification could quickly become simply a game, rather than a substantive method for enhancing worker motivation, effectiveness, and performance.

Another potential implementation challenge relates to leader buy-in and subsequent gamification legitimacy. Legitimacy is a social process mediated by the relationship between structure (in this case, work gamification) and employee action (e.g., motivation [Aime, Meyer, & Humphrey, 2010]). Legitimacy acts through a collective agreement that governs behavior (Ridgeway, 1989). Applied to gamification – as with other performance management tools, such as compensation systems (Aime et al., 2010) – perceived legitimacy is likely to affect how workers respond to gamification. Thus, an important avenue for future research is to examine the role of organizational leaders in shaping the effectiveness of work gamification.

Our framework also raises questions about ethical concerns associated with the increased visibility, comparability, and immediacy of worker performance information. Because of the strong tie to digital and computer gaming (Maciuszek & Martens, 2012; Zichermann & Cunningham, 2011), work gamification necessitates some type of technological interface – a computer, hand held device, etc. – that workers can access with frequency. Because of the importance of technological accessibility, some organizations may choose to make gamification platforms available via technologies, such as smartphones and other handheld devices, that can be accessed remotely or when one's job does not involve high technological connectivity (e.g., park ranger, line worker, retail associate). If this means that worker information can be accessed anytime and anywhere, ethical concerns may surface around how this information could be used and shared either within the organization or outside of it (Alder, 1998). Particularly with respect to the comparability of performance information feature of work gamification, worker performance information could unintentionally be made public. Thus, individuals may be put at increased risk of violating their co-workers' right to privacy about their performance at work.

Additionally, the factors that qualify the effectiveness of work gamification raise additional questions about key differences between digital games used for leisure and game features applied to work. Past research highlights some key differences between leisure games and work gamification (Crookall et al., 1987; Garris, Ahlers, & Driskell, 2002). For example, leisure games are by definition comprehensively "gamified," meaning that there is nothing going on that is not part of the game (Deterding et al., 2011). In contrast, even in work contexts where work gamification has been enthusiastically adopted, gamified work can never be entirely game-like – it will remain a mixture of "work and play," with some elements of work gamified and some not. This means that work, unlike games, likely will always be only *partially* gamified, and that work gamification may not extend to all tasks and goals linked to worker motivation, effectiveness, and performance. Because tasks for which workers receive more frequent feedback gain more attention and effort from workers (Northcraft et al., 2011), gamified work may focus workers on the completion of some tasks to the detriment of others.

Another important difference is that leisure games are not typically embedded in consequential real world systems (Caillois, 1961; Crookall et al., 1987). If an individual fails to kill the dragon, does not collect the proper arsenal of tools, or loses a "life," there are no real consequences of that failure, and the player's chances of prevailing on subsequent attempts are not diminished by previous failure (Garris et al., 2002). In the context of gamified work, this might not be the case. Workers desire important outcomes outside the game – e.g., promotion, raises, or status. Failure to meet performance standards has real consequences in the form of these tangible outcomes (Spector et al., 1988). These key differences form the foundation of what might be considered a "transferability problem" – the inability of work gamification to sustain the translation of game motivation into work motivation. Exploring the boundaries of transferability will be an important avenue for future research.

3.1. Practical implications

The work gamification framework provides managers with an actionable and tractable model for using work gamification to influence worker motivation and effectiveness, and thus performance. We have suggested that enhanced motivation and effectiveness may occur through informational and affective pathways. However, our model also suggests that gamification may not be equally effective in all applications or for all workers. In particular, our framework suggest that organizations may benefit when they apply gamification to "middle-term" task contexts (e.g. training, motivating a project team to meet a deadline), and

provide workers with greater access to the many self-managed gamification tools available in addition to relying on manager-sourced gamification applications. Finally, some types of workers are likely to respond better to gamification. In particularly, those workers who are high in competitive traits and the highest performers will be most motivated by the visible, comparable, and immediate access to performance information afforded by work gamification. Organizations choosing to adopt work gamification can benefit from the knowledge that some applications likely will be more effective than others, and that work gamification may be more attractive for some types of workers. With respect to the latter, if as our model suggests, the visible, comparable, and immediate access to performance information afforded by work gamification is potentially demotivating for individuals who are not top performers, organizations may wish to consider applying a normative standard to gamified tasks such that most can "win" (e.g., level up, earn points and badges), but few can excel (e.g., top the leaderboard).

Our model also shows that in addition to enhancing worker motivation, work gamification also could provide organizations with a mechanism for continually managing performance. Our analysis has focused on why work gamification may improve worker motivation and effectiveness via improved access to performance information and work enjoyment. But the visibility, comparability, and immediacy of performance information fostered by work gamification should also be good for organizations because it forces managers to clarify goals and it allows them to quickly identify problems associated with worker goal attainment – and make mid-course corrections as needed. Consequently, work gamification may offer particular promise when work is managed virtually – as in the case of telecommuting (Gajendran & Harrison, 2007) or off-shoring (Manning, Massini, & Lewin, 2008). Work gamification may offer a vehicle to manage worker motivation and effectiveness when supervisors are less able to physically monitor progress.

3.2. Limitations and additional directions for future research

Though the framework presented here offers testable propositions for future research, as well as actionable strategies for organizations, it has some theoretical limitations suggestive of opportunities for future research. First, while we have focused on the implications and boundary conditions of gamification for the *individual* experience of work, our model does not consider the application of this framework to *group*-level motivation. These same game features could also be applied group level (e.g., high scores for group performance, and badges for group accomplishments), possibly resulting in group-level contributors to enhanced work motivation, such as increased social worth, and a greater sense of inclusion and belongingness at work (McGonigal, 2011). Second, though our model considered individual-level boundary conditions (worker competitiveness and performance level), other individual differences may affect workers' responsiveness to work gamification. For example, there is evidence that computer games provide an immensely compelling and rewarding experience for younger workers (Garris et al., 2002). These workers have been exposed to digital technology at a younger age (Morris & Venkatesh, 2000). Consequently, compared to older generations, these younger workers tend to experience higher self-efficacy and less computer anxiety than older people, and perceive their skill in this domain to be much higher (Arning & Ziefle, 2007). Accordingly, work gamification may be particularly motivating and enjoyable for this segment of the workforce. Third, though we considered application-level boundary conditions (type and source of application), there are other applications features that may be important. For example, game pacing, and visible features of gamification (colors, sounds, etc.), may influence how workers respond to gamification (Kapp, 2012). Fourth, though our theory considers the importance of game novelty as it relates to application type, we reference single gamification types. Yet, organizations may have may use several types of gamification applications to improve employees' sense of novelty related to gamification. Additional research should focus on the effects of multiple gamification applications implemented simultaneously. Fifth, a key element of our model is that work gamification is effective because it provides visible, comparable, and immediate feedback about performance information. However, it is also worth considering how game-generated feedback may relate to other significant forms of feedback in organizations, such as feedback from supervisors (Humphrey et al., 2007; Morgeson & Humphrey, 2006). Thus, it is worth examining how performance feedback afforded by work gamification may combine with supervisor feedback in work settings. Performance information provided by gamification may have substitutive effect, such that it reduces the need for supervisory feedback or works more effectively when employees have few opportunities to receive feedback from supervisors (Dale, 2014); it may have an additive effect by raising overall levels feedback provided to workers, thereby helping them to build more certainty about what needs to be done and how to do it (Griffith, 1993); or it may have a competing effect if multiple sources of feedback raise the potential for role conflict (Ferris et al., 2008; Katz & Kahn, 1978). Future research is needed to explore these relationships. In a related vein, while we have suggested that the provision of real time feedback may be an important mechanism linking work gamification to motivation, future research could build on our model to examine whether and how specific forms of feedback provision affect this relationship. For example, might it matter whether feedback is public (vs. private), provides (or fails to provide) constructive ideas for change, or emphasizes employee accomplishments (vs. failures). These and other factors associated with feedback provision may represent important moderators to our model.

Sixth, while we have suggested that the novelty of the game is likely to wear off over time, there is also evidence that games can be "addictive" for some individuals, such that time may be less likely to diminish play (Kuss, Louws, & Wiers, 2012). Thus, future research could examine how individual differences (e.g., in employee motives for escapism or in the perceived attractiveness of game features) might influence the effect of work gamification on employee motivation.

Finally, our theory has focused on the outcomes of work gamification associated with a collection of game features. Though we have provided important theoretical clarification about the pathways through which work gamification – broadly characterized – effects task outcomes, we did not focus on the effects of specific game features or on the technological components that make these possible. Thus, future research could provide this elaboration.

4. Conclusion

As Emily Dickinson once famously commented, “It is easy to work when the soul is at play.” While proponents of work gamification have argued that leveraging the power of digital games in the workplace may be one way to crack the code of worker motivation, effectiveness, and performance, our analysis strikes a more cautionary note. We suggest that while work gamification can provide real benefits for work motivation and effectiveness, potential adopters need to acknowledge the factors that qualify its efficacy and implementation. Understanding how, why, and when work gamification works, as well as how to enhance its potential benefits will ensure that organization are better prepared to lay claim to a significant, long-term performance management resource in the managerial toolbox of organizations, rather than simply adopting a cool yet transient fad.

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