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Fan engagement behavior: Validation of a theory-based scale

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Fan engagement behavior: Validation of a theory-based scale**Abstract**

In this research, we conducted two studies to validate a multidimensional scale of fan engagement behavior. In Study 1, we generated survey items through a systematic review of the relevant literature, collected data from fans of professional baseball (n = 319) and soccer (n = 301), and provided evidence for the construct and concurrent validity of the scale composed of six dimensions. In Study 2, we reassessed construct validity in professional baseball (n = 582) and found that fan engagement behavior was represented by the proposed six dimensions with a final list of 21 items. Further, our predictive analysis throughout a season showed that fan engagement behavior fully mediated the relationship between predictor (team identification and awareness of fan engagement initiatives) and outcome variables (media viewing frequency, attendance frequency, and flourishing). The developed scale advances our understanding of fans' voluntary actions that are culturally embedded in spectator sport.

Keywords: fan engagement, customer engagement, customer engagement behavior, spectator sport, scale development

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Introduction

Over the past two decades, scholars have emphasized the importance of customers' engagement in various non-transactional behaviors such as customer learning, knowledge sharing, and value co-creation (Brodie et al., 2013; Dessart et al., 2015; Hollebeek et al., 2019; van Doorn et al., 2010). Conceptually, customer engagement has been discussed as a customer's voluntary act of contributing to the success of a company (Dessart et al., 2015; Jaakkola & Alexander, 2014) or a customer's attitudinal state that arises by virtue of co-creative experiences with a company and encompasses cognitive absorption, emotional dedication, and behavioral activation (Brodie et al., 2011; Hollebeek et al., 2014). The difference between these two approaches is whether customer engagement is viewed as a behavioral activity (customer engagement behavior) or a combination of cognitive, affective, and behavioral responses to a specific consumption object (customer engagement; McDonald et al., 2022).

In sport management, scholars have applied customer engagement to the participatory and spectator sport contexts (Behnam et al., 2021; Huettermann et al., 2022; Yoshida et al., 2014). To date, customer engagement in the sport context has been found to positively influence media consumption, merchandise consumption, and customer loyalty (Fathy et al., 2021; Huettermann & Kunkel, 2022; Yoshida et al., 2014). Thus, scholars and practitioners believe that engaging sport consumers in non-transactional behaviors contributes to the long-term growth and profitability of a sport organization.

While previous work has conceptualized customer engagement via cognitive evaluation, affective bonds, behavioral responses, or through an amalgamation of these (see Brodie et al. 2011), we focus on the behavioral aspects of engagement. Despite the advancements that have been made regarding customer engagement behavior in spectator sport (Huettermann et al.,

1 2022; McDonald & Karg, 2014; Yoshida et al., 2014), existing conceptualizations and measures
2 of fan engagement behavior (McDonald & Karg, 2014; Yoshida et al., 2014; Yun et al., 2021) are
3 limited and incomplete because they do not reflect the latest development of customer
4 engagement theory (Hollebeek et al., 2019; Pansari & Kumar, 2017). A key aspect of this
5 theoretical development is the harmonization of customer engagement and service-dominant
6 logic (SDL; Brodie et al., 2011; Hollebeek et al., 2019; Vargo & Lusch, 2004). SDL is a
7 theoretical perspective to understand the importance of intangible operant resources (e.g.,
8 knowledge, skills, and abilities), value co-creation, and relationship marketing in the service
9 economy (Vargo & Lusch, 2004). An integrative model of customer engagement and SDL views
10 (1) consumers who apply specialized knowledge and skills (operant resources) and physical
11 objects (operand resources) to create value as resource integrators and (2) considers customer
12 engagement as a consumer's (resource integrator's) investment of operant and operand resources
13 into consumer-company interactions in service exchanges (Hollebeek et al., 2019). Integrating
14 fan engagement behavior with key SDL concepts is important because customer engagement
15 theory suggests that value co-creation, operant resource development, and resource integration
16 represent the defining elements of customer engagement (Hollebeek et al., 2019).

17 However, this integrative view of customer engagement and SDL is not reflected in the
18 literature on fan engagement behavior. Existing work has examined sport fans' non-transactional,
19 extra-role behaviors such as fan rituals, management cooperation, prosocial behavior,
20 performance tolerance, and fan community participation (McDonald & Karg, 2014; Yoshida et
21 al., 2014; Yun et al., 2021), notably overlooking SDL-informed dimensions of engagement
22 behavior. An exception is Huettermann et al.'s (2022) qualitative exploration of fan engagement
23 behavior from an SDL perspective that identified three novel components of fan engagement

1 behavior: fan resource integration, fan learning, and fan knowledge sharing.

2 Given the limitations of previous research, the purpose of this study is to reconceptualize
3 fan engagement behavior and validate a new measurement instrument. In doing so, we make
4 three contributions to the literature. First, our reconceptualization extends previous research by
5 integrating work on sport spectators' non-transactional extra-role behaviors (e.g., Yoshida et al.,
6 2014) with SDL-informed dimensions of fan engagement (e.g., Huettermann et al., 2022) as well
7 as recent theoretical advancements at the intersection of SDL and the engagement behavior
8 literature (Hollebeek et al., 2019; Vargo & Lusch, 2004), hence providing a more comprehensive
9 and richer theoretical conceptualization. Second, we generate survey items to measure fan
10 engagement behavior, analyze the factor structure of the initial scale, and provide evidence for
11 construct and concurrent validity. Thus, our work goes beyond recent qualitative and conceptual
12 studies on fan engagement behavior (Huettermann et al., 2022; McDonald et al., 2022). Third,
13 we extend previous research by testing a theoretical model that explains the antecedents and
14 consequences of fan engagement behavior. In the following sections, we first reconceptualize fan
15 engagement behavior. Next, our theory-based empirical approach follows Hinkin's (1998)
16 deductive scale development process and includes two studies using multiple samples in the
17 context of professional sport.

18 **Reconceptualizing Fan Engagement Behavior**

19 **Conceptual background.** Fan engagement behavior is an extended form of customer
20 engagement behavior in the sport context (Yoshida et al., 2014). Customer engagement behavior
21 was first defined by van Doorn et al. (2010) as "a customer's behavioral manifestations that have
22 a brand or firm focus, beyond purchase, resulting from motivational drivers" (p. 254). A review
23 of the recent literature regarding SDL-informed customer engagement indicates that the

1 conceptualization of customer engagement behavior rests on several foundational processes
2 (Hollebeek et al. 2019). In early work on SDL, eight foundational premises were proposed as
3 theoretical underpinnings of SDL (Vargo & Lusch, 2004). More recently, SDL has been extended
4 to eleven foundational premises and five main axioms (Vargo & Lusch, 2016). Hollebeek et al.
5 (2019) use SDL as the theoretical lens to develop the SDL-informed framework of customer
6 engagement that is grounded in two of the five main axioms: (a) “value is cocreated by multiple
7 actors, always including the beneficiary” and (b) “all social and economic actors are resource
8 integrators” (Vargo & Lusch, 2016, p. 18).

9 Aligning these two axioms, Hollebeek et al. (2019) identify six defining elements of
10 customer engagement: customer resource integration, customer learning, customer knowledge
11 sharing, customer cocreation, customer interpersonal operant resource development, and
12 customer individual operant resource development (see Figure 1). Customer resource integration,
13 customer learning, and customer knowledge sharing are conceptualized as foundational
14 processes of customer engagement, whereas the other elements are viewed as the benefits that
15 are derived from the three foundational processes (Hollebeek et al., 2019). Originally, the benefit
16 dimensions of SDL-informed customer engagement (i.e., customer cocreation, customer
17 interpersonal operant resource development, and customer individual operant resource
18 development) are highly abstract and do not reflect the peculiarities of a specific context (e.g.,
19 spectator sport) because customer engagement “is contingent on focal context-specific
20 characteristics” and the benefits of customer engagement “may thus vary across contextual
21 contingencies” (Hollebeek et al., 2019, p. 173). Thus, to identify specific benefit dimensions in
22 the spectator sport context, we focus on fans’ unique activities and incorporate them into our
23 conceptualization. This conceptual approach is consistent with Gladden and Funk (2002) and

1 Bauer et al. (2008) who suggest that the experiential benefits (e.g., entertainment, escape, and
2 socializing/companionship) derived from spectator sport consumption are associated with fans'
3 specific activities (e.g., pre- and in-game activities occurring at the stadium). In the next section,
4 we propose a new framework to reconceptualize fan engagement behavior in the sport context.

5 **Conceptual framework.** Consistent with an established view, we define fan engagement
6 behavior as a consumer's voluntary contribution to the success and welfare of a sport team
7 through value-adding behaviors, going beyond the mere consumption of sport products such as
8 ticket purchase and television viewing (Dessart et al., 2015; Jaakkola & Alexander, 2014; Pansari
9 & Kumar, 2017; van Doorn et al., 2010). To develop our conceptual model, we draw on the
10 SDL-informed engagement framework (Hollebeek et al., 2019) and relevant concepts in previous
11 research and propose six dimensions: fan resource integration, fan learning, fan knowledge
12 feedback, ritualistic fan behavior, management cooperation, and flow experience (see Figure 1).
13 As a conceptual starting point, we adopt customer resource integration and customer learning
14 based on the SDL-informed framework (Hollebeek et al., 2019) and conceptualize them as fan
15 resource integration and fan learning in spectator sport. In this study, fan resource integration is
16 defined as a consumer's voluntary act of integrating and applying operant (e.g., knowledge and
17 skills) and operand (e.g., fan equipment and technological devices) resources to enhance sport
18 consumption capabilities (Hollebeek et al., 2019; Huettermann et al., 2022). Fan learning refers
19 to a consumer's voluntary act of seeking and processing information, content, and ideas for the
20 acquisition of knowledge or skills related to spectator sport consumption via both online and
21 offline communication channels (Hollebeek et al., 2019; Huettermann et al., 2022).

22 To extend the SDL-informed framework in the sport context, we identify four unique
23 dimensions: fan knowledge feedback, ritualistic fan behavior, management cooperation, and flow

1 experience (see Figure 1). We include these dimensions because they are context-specific
2 reflections of customer knowledge sharing, customer cocreation, customer interpersonal operant
3 resource development, and customer individual operant resource development in the SDL-
4 informed framework (Hollebeek et al., 2019). First, fan knowledge feedback is included because
5 it is a type of knowledge sharing behavior in customer engagement (Kumar & Pansari, 2016;
6 Pansari & Kumar, 2017). In spectator sport, sport fans show their engagement with their favorite
7 teams by providing suggestions for service improvement or through participating in the
8 development of new spectator sport products (Lee & Kim, 2022). In this study, fan knowledge
9 feedback is defined as a consumer's voluntary act of giving constructive feedback to a sport team
10 and its employees to facilitate the development or improvement of its offerings (Kumar &
11 Pansari, 2016; Pansari & Kumar, 2017).

12 Second, customer cocreation is part of the SDL-informed framework, but it could be
13 conceptualized as ritualistic fan behavior from the consumer's perspective because sport fans'
14 cocreation behavior has deep roots in fan rituals at spectator sport events (McDonald & Karg,
15 2014). It is posited that fan rituals represent cocreated group behavior in fan communities such as
16 wearing team colors, singing fight songs, and participating in cheering activities (Gordon et.al.,
17 2021; McDonald & Karg, 2014; Yoshida et al., 2015). In the current study, we define ritualistic
18 fan behavior as a consumer's voluntary act of expressing formalized fan activities (e.g., praying,
19 singing, and wearing team apparel) in an episodic sequence with seriousness, solidarity, and
20 humor to cocreate symbolic fan experiences with their favorite teams and other fans (Rook,
21 1985; Wang & Tang, 2018).

22 Third, management cooperation is linked to customer interpersonal operant resource
23 development. Management cooperation acts as the development and implementation of fans'

1 operant resources (e.g., knowledge and skills) through social interactions with event personnel
2 and the stadium environment (Yoshida et al., 2014). For example, sport fans adhere to ethical fan
3 conduct guidelines and assist event personnel to ensure the safety of attendees at sporting events
4 (Yoshida et al., 2014). These considerations allow us to define management cooperation as a
5 consumer's voluntary act of following rules and guidelines to collaboratively participate in the
6 value creation and service delivery processes at spectator sport events (Yoshida et al., 2014).

7 Finally, we include sport fans' flow experiences as a proxy variable of customer individual
8 operant resource development. Flow experience is the prototypical form of engagement (Coffey
9 et al., 2016; Seligman, 2011) and refers to a subjective state that people become highly
10 immersed, completely absorbed, and fully engaged in an activity (Csikszentmihalyi et al., 2014).
11 Flow experience is deemed appropriate as a reflection of sport fans' individual operant resource
12 development because, to achieve a state of flow in spectator sport, fans need to fully invest their
13 attention and skilled resources (e.g., knowledge and expertise) in watching games (Kim & Ko,
14 2019). In this study, flow experience is defined as a consumer's optimal experience of
15 intensively watching an on-field performance that is intrinsically enjoyable and interesting
16 (Csikszentmihalyi et al., 2014; Kim & Ko, 2019). Taken together, there is sufficient justification
17 for the proposed multidimensional conceptualization which includes six dimensions. In Study 1,
18 we developed the initial measures based on our multidimensional conceptualization.

19 **Study 1**

20 **Item Generation**

21 Over the past decade, many scales have been constructed to measure fan engagement
22 behavior and its related concepts (e.g., Huettermann & Kunkel, 2022; Lee & Kim, 2022;
23 McDonald & Karg, 2014; Wang & Tang, 2018; Yoshida et al., 2014; Yun et al., 2021). However,

1 “if a survey instrument is an ill-defined mix of different items that are not supported by a well-
2 established factor structure and are summarized by an average of these items, then there is no
3 basis for knowing what is being measured” (Marsh et al., 2020, p. 296), and thus a
4 reconsideration and redevelopment of fan engagement measures is warranted. To develop a
5 concise scale that has reliable and valid empirical support for the theoretically based dimensions
6 of fan engagement behavior, we build on the theoretical foundations of a well-established
7 customer engagement concept: SDL-informed customer engagement (Huettermann et al., 2022;
8 Hollebeek et al., 2019). Therefore, the objectives of Study 1 are to generate survey items for the
9 theoretically derived dimensions and provide evidence of construct and concurrent validity for
10 the initial scale.

11 To validate a theoretically derived scale for a construct, a thorough review of the relevant
12 literature is crucial to identify survey items of various factors related to the target construct
13 (Clark & Watson, 1995; Marsh et al., 2020). Thus, we performed a systematic literature review to
14 generate an initial pool of survey items (Liberati et al., 2009; see Figure 2). First, we searched
15 three databases (EBSCO, ScienceDirect, and ProQuest) using the following search formula:
16 (sport OR sports) AND (spectator OR fan) AND (engage OR engagement). The first search
17 resulted in 326 records. Second, we identified 618 records in the same databases using a
18 combination of various search terms including the dimensions identified in our
19 conceptualization: (sport OR sports) AND (spectator OR fan) AND (cocreation OR resource
20 integration OR customer learning OR sharing OR customer participation OR fan participation
21 OR fan experience OR cooperation OR feedback OR socializing OR advocating OR
22 customization OR extra-role OR non-transactional OR helping OR prosocial OR citizenship).
23 Third, we conducted a manual journal search through Google Scholar using the same

1 bibliographic search strategy and found an additional 47 articles. This initial search yielded 902
2 records after removing duplicates.

3 Next, we performed title, abstract, and full-text reviews. Beginning with the title review,
4 we excluded 403 records because their titles were not relevant to fan engagement behavior.
5 During the abstract review, we further rejected 271 records that were conceptual, qualitative,
6 non-academic (e.g., book chapters and book reviews), or non-English papers. After the title and
7 abstract reviews, we obtained the full texts of 228 articles for further consideration. Of the
8 articles retrieved, 161 articles were excluded because they did not meet the following eligibility
9 criteria: (a) quantitative studies in spectator sport, (b) studies related to fan engagement behavior
10 with at least one of the six dimensions we propose, and (c) studies in which survey items are
11 available. As a result, we identified 449 items from 67 articles. Further, we excluded 371 items
12 because they were redundant, non-behavioral, or mere consumption items (e.g., ticket purchase).
13 At this stage, we selected 78 surveys items from 37 articles as the initial item pool.

14 **Content Analysis**

15 Through our systematic review, we adapted 78 items used in previous studies. To assess
16 content validity, six experts in sport marketing were invited to evaluate the relevance of each
17 item to the construct definition using a four-point scale ranging from “Not relevant (1)” to
18 “Highly relevant (4)” (Polit & Beck, 2006). We then used the item-content validity index (I-
19 CVI), which can be calculated by counting the number of experts who gave a rating of 3 or 4 and
20 dividing that number by the total number of experts (Polit & Beck, 2006). When there are six
21 experts, the minimum value of the I-CVI is .78 (Polit & Beck, 2006). After computing the I-CVI
22 for all items, 23 items exceeded this cutoff point. In addition, revisions were made to four items
23 in terms of the wording because some experts provided suggestions for changing words. At this

1 stage, we eliminated 55 items, leaving 23 items.

2 **Back Translation**

3 We generated the survey items in English and then collected data in Japan. To assess the
4 equivalence between the original English instrument and the translated Japanese instrument, we
5 used a back-translation technique (Douglas & Craig, 2007). First, the English items were
6 translated into Japanese by one of the authors who is bilingual in Japanese and English. Second,
7 back-translation from Japanese into English was conducted by a paid translator who is bilingual
8 in Japanese and English. Third, one of the authors, who is a native English speaker, evaluated the
9 meaning equivalence between the original and back-translated versions. The comparison of the
10 two instruments indicated that there were no discrepancies between the two forms. For further
11 analysis, the 23 items were transformed into a questionnaire using seven-point rating scales
12 ranging from strongly disagree (1) to strongly agree (7).

13 **Research Setting and Data Collection**

14 Study 1 was conducted in two Japanese professional sport settings: professional baseball
15 and professional soccer. Data were collected by Macromill, Inc., a major Internet research
16 agency in Japan. After the baseball season was over in November 2021, invitation emails were
17 sent by the Internet research agency to a panel of about 30,000 individuals who were local
18 residents of the following two teams: the Hanshin Tigers (the second-ranked team in the six-team
19 league) and the Yokohama DeNA BayStars (the sixth-ranked team in the same league). We
20 purposively selected these teams because we attempted to validate our results including both the
21 winning and losing teams¹. To identify respondents with sufficient experiences as a sport fan, we
22 utilized two screening questions in both settings: (a) following these teams and (b) attending

¹ There are six teams in this league (the Central League of Japanese professional baseball).

1 games of these teams in the past three years (2019-2021). We used these screening questions
2 until 5,000 respondents were determined to be eligible for this study. Although our retrospective
3 questionnaires could not measure fan engagement behavior in real time, the precision of recall
4 for the target information can be improved by asking the respondents about a specific sport
5 context and recent consumption experiences (Kim & Choi, 2013). Thus, our two screening
6 questions were deemed constructive to enhance recall accuracy because the subjects' responses
7 to the survey items were based on the actual games they had attended in recent years.

8 Next, from November 26th to November 28th, the survey continued until approximately
9 330 fans of the two teams (165 fans of each team) completed the questionnaire. Collectively, we
10 gathered 338 responses in the baseball setting. Among the questionnaires returned, 19 subjects
11 were eliminated because many items were left blank, yielding a usable sample of 319
12 participants. The demographic characteristics of the respondents showed that 65.6% were male.
13 The average age of the respondents was 45.12 years (standard deviation = 13.57).

14 In the soccer setting, after the regular season ended in December 2021, the same research
15 firm invited approximately 60,000 registered members who lived in the franchise cities of the
16 following winning and losing clubs: the Kawasaki Frontale (the first-ranked club in the twenty-
17 team league) and the Gamba Osaka (the thirteenth-ranked team in the same league). We
18 employed similar procedures used in the baseball setting and collected data from spectators
19 following the two clubs from December 10th to December 12th. The responses from the two
20 clubs were combined, resulting in a total of 332 subjects in the soccer setting. Among the 332
21 forms returned, 31 were rejected due to the large number of missing values. Overall, data were
22 collected from 301 respondents. Of the soccer sample, 64.8% of the subjects were male. The
23 average age and standard deviation of the respondents were 44.83 ± 14.70 years.

1 To ensure the representativeness of our samples, we compared our baseball and soccer
2 sample characteristics with those of large survey projects that collected data from stadium
3 attendees at professional soccer games ($n = 17,329$; J. League, 2020²) and residents of Japan ($n =$
4 $3,000$; Sasakawa Sports Foundation, 2016³). The gender distributions of our baseball (male =
5 65.6%, female = 34.4%) and soccer (male = 64.8%, female = 35.2%) samples were parallel to
6 stadium attendees at professional soccer games (male = 61.5%, female = 38.5%; J. League,
7 2020) and those watching at least one game at stadiums or arenas in the past twelve months
8 (male = 56.9%, female = 43.1%; Sasakawa Sports Foundation, 2016). The average ages of our
9 baseball ($M = 45.12$) and soccer ($M = 44.83$) samples were also similar to the ages of those
10 attending professional soccer events ($M = 42.8$; J. League, 2020) and those attending games of
11 various sports at least once a year ($M = 46.9$; Sasakawa Sports Foundation, 2016). Therefore, our
12 samples were deemed representative of the population of Japanese sport spectators.

13 **Results**

14 We conducted a confirmatory factor analysis with Muthén and Muthén's Mplus 7.31 using
15 two samples from the professional baseball and professional soccer settings. We analyzed the
16 factor structure of the two samples independently because we wanted to test whether the
17 proposed dimensions were consistent across the two samples from a cross-validation perspective.

18 In this section, we report the results of construct and concurrent validity tests.

19 **Construct validity.** Overall, the model fit is acceptable when evaluating all the fit indices in the
20 baseball ($\chi^2/df = 2.27$, comparative fit index = .96, Tucker Lewis index = .95, root mean square
21 error of approximation = .063, standardized root mean square residual = .041) and soccer (χ^2/df

² J. League (2020) conducted a questionnaire survey using a stratified two-step sampling method based on gender and age, targeting home game attendance of 55 clubs in all divisions (three divisions) in the 2019 season.

³ The Sasakawa Sports Foundation (2016) carried out a questionnaire survey of general adults over the age of 20 across Japan, using quota sampling by considering the area of residence and the population size.

1 = 3.46, comparative fit index = .93, Tucker Lewis index = .91, root mean square error of
2 approximation = .090, standardized root mean square residual = .057) contexts (Hu & Bentler
3 1999). Table 1 shows factor loadings (λ), composite reliability, and average variance extracted
4 values. For both samples, the factor loading of one item to measure management cooperation
5 was smaller than .70⁴. Also, another item for ritualistic fan behavior in the baseball setting did
6 not exceed the factor loading of .70. After eliminating these two items (Hair et al., 2006), the
7 factor loadings ranged from .76 to .91 for the baseball sample and from .75 to .95 for the soccer
8 sample. In both settings, the composite reliability values were greater than the cutoff point of .60
9 (Bagozzi & Yi, 1988). The average variance extracted values were also above the recommended
10 value of .50 for the two samples (Fornell & Larcker, 1981). Thus, convergent validity was
11 indicated. Discriminant validity was examined by comparing the square root of the average
12 variance extracted value of each dimension with its correlations with the other dimensions. In the
13 baseball setting, none of the correlations exceeded the square roots of the average variance
14 extracted values. In the soccer setting, the square roots of the average variance extracted values
15 were greater than any correlations in 14 cases out of a total of 15 correlations. In one case, the
16 correlation between fan learning and ritualistic fan behavior ($\phi = .82$) was greater than the square
17 root of the average variance extracted value of fan learning (.77). Nevertheless, the correlation
18 coefficient between these constructs was lower than the suggested criterion of .85 (Kline, 2005).

19 Also, using Muthén and Muthén's Mplus 7.31, we employed the Wald Test of Parameter
20 Constraints for the soccer sample and compared a model in which the correlation between fan
21 learning and ritualistic fan behavior to be equal to 1.00 with an unconstrained model in which the

⁴ In our six-factor model, we eliminated items with factor loadings below the cut-off point of .70 because Hair et al. (2006) suggest that "a larger loading is needed given a factor solution with a larger number of factors" (p. 129) and "loadings exceeding +.70 are considered indicative of well-defined structure" (p. 128).

1 correlation was allowed to vary freely (Anderson & Gerbing, 1988). The result showed a
2 significant difference between the two models (Wald χ^2 [1] = 41.73, $p < .01$), indicating that the
3 unconstrained model ($\chi^2/df = 3.46$) was significantly better than the constrained model ($\chi^2/df =$
4 3.80). Altogether, the results provide evidence for discriminant validity.

5 **Concurrent validity.** Concurrent validity is concerned with the extent to which an
6 instrument is associated with other established instruments that measure similar constructs when
7 testing at the same time (Cronbach & Meehl, 1955). We assessed the concurrent validity of our
8 scale by examining the relationships between the proposed six dimensions and team brand
9 engagement that was measured by seven items adapted from Keller's (2003) active brand
10 engagement scale. This scale has been used in previous sport management research (Gordon &
11 James, 2017; Tsordia et al., 2018). Examples of the items include: "I regularly talk about [team
12 brand name] to others" and "I often let others know I passionately support [team brand name]."
13 The meaning equivalence between the English and Japanese versions of this scale was assessed
14 and confirmed by the same back-translation procedures used for the proposed fan engagement
15 behavior scale. The composite reliability and average variance extracted values for team brand
16 engagement were .92 and .62 in the baseball setting and were .94 and .70 in the soccer setting. In
17 both settings, each dimension was found to be significantly related to team brand engagement at
18 the .01 significance level (see Table 3). The strength of these relationships ranged between .55
19 and .77 for the baseball sample and between .61 and .86 for the soccer sample. These findings
20 support the concurrent validity of the six dimensions.

21 **Discussion of Study 1**

22 Study 1 serves as the initial effort to factor-analyze the proposed multi-dimensional
23 reconceptualization of fan engagement behavior. The results provided evidence of convergent

1 and discriminant validity regarding our measurement instrument in both settings (see Table 1 and
2 Table 2). We also found evidence for concurrent validity by correlating the proposed six
3 dimensions to an external measure of team brand engagement. The results suggest that our
4 multidimensional scale adequately represents the target domain of fan engagement behavior as it
5 has strong correlations with team brand engagement for both samples (see Table 3).

6 One limitation of Study 1 was that we examined the relationship between fan engagement
7 behavior and a related construct (active brand engagement) based only on correlational data.
8 Thus, in Study 2, we endeavor to overcome this limitation by (a) developing hypotheses linking
9 fan engagement behavior to predictor and outcome variables and (b) testing nomological validity
10 based on data from two different time periods.

11 **Study 2**

12 In Study 2, we aim to (1) develop a theoretical model of the relationships between fan
13 engagement behavior and its antecedents and consequences and (2) provide evidence for the
14 construct and nomological validity of the proposed multidimensional scale.

15 **Theoretical Model**

16 Nomological validity refers to the accuracy of the relationships between a construct of
17 interest and other concepts in a theoretical model (Hair et al., 2006). Our theoretical model is
18 shown in Figure 3. In the study of attitude-attitude relationships, creating a temporal separation
19 (time lag) between the measurement of the focal construct and its criterion variables is important
20 for controlling for common method bias (Podsakoff et al., 2003). Thus, we propose a predictive
21 model at two different time periods, identify the antecedents (team identification and awareness
22 of fan engagement initiatives) of fan engagement behavior in time 1, and include fan engagement
23 behavior, its consequences (media viewing frequency, attendance frequency, and flourishing),

1 and control variables in time 2. Below, we generate research hypotheses in a nomological
2 network of related concepts.

3 **Team identification.** Team identification is an enduring sense of group membership and
4 refers to the degree to which spectators regard themselves as psychologically intertwined with
5 their favorite sport team and experience the team's successes and failures as their own (Gwinner
6 & Swanson, 2003; Yoshida et al., 2023). Organizational identification theory (Ashforth & Mael,
7 1989) and the extended model of team identification (Sutton et al., 1997) explain that (1)
8 consumers identify with prestigious and distinctive sport teams and (2) highly identified fans
9 engage in supportive behaviors that can benefit their favorite teams. In the sport management
10 literature, research has shown that team identification leads not only to the long-term
11 consumption of spectator sport (e.g., watching, attending, reading, and purchasing; Heere et al.,
12 2011; Sutton et al., 1997), but also to non-transactional fan engagement behaviors such as flow
13 experience, performance tolerance, management cooperation, prosocial behavior, and fan
14 citizenship behavior (Lee et al., 2017; Yoshida et al., 2014). The underlying rationale is that team
15 identification helps people have meaning in their life and invest themselves in unselfish behavior
16 (Delia et al., 2022; Inoue et al., 2015). This is because individuals feel more purpose-driven in
17 their communal consumption activities and engage in prosocial behavior when they find the
18 overlap between their personal values and the characteristics of the sport team that they identify
19 with (Bhattacharya & Sen, 2003). Simply put, we posit fans will engage in value-adding
20 behaviors that are perceived as meaningful by finding similarities between the consumers and
21 their favorite sport teams. Thus, the following hypothesis is developed based on the reasoning
22 presented above:

23 H1: Team identification positively affects fan engagement behavior.

1 **Awareness of fan engagement initiatives.** Customer engagement initiatives are defined as
2 “organizational initiatives that facilitate firm–customer interactions or interactions among
3 customers, with the primary goal of fostering an emotional and psychological bond between
4 customers and the firm” (Gill et al., 2017) Such initiatives include informative (e.g., customer
5 reviews and online Q&A activities) and entertaining initiatives (e.g., entertainment opportunities
6 and hedonic experiences) to guide consumers’ voluntary contribution to an organization’s
7 marketing functions (Eigenraam et al., 2021; Harmeling et al., 2017).

8 In the spectator sport industry, fan-team interactions on social media sites (e.g., Twitter and
9 Instagram) generated through team initiatives such as videos or quizzes posted are examples of
10 fan engagement initiatives that develop a capability to guide sport fans’ voluntary contributions
11 to marketing communications. As another example, professional sport teams implement
12 experiential marketing practices (Funk, 2017; Yoshida, 2017) consisting of pre- and in-game
13 activities, social interaction opportunities in fan communities, and mobile applications related to
14 the core product (e.g., game statistics and replay) and ancillary services (e.g., facility navigation
15 and team merchandising products). In this study, we conceptualize these engagement initiatives
16 as awareness of fan engagement initiatives from the consumer’s point of view and define it as a
17 consumer’s awareness of organizational initiatives that facilitate fan-team and fan-to-fan
18 interactions, with the primary goal of fostering an emotional and social bond between fans and
19 their favorite teams. We use consumer awareness because sport fans easily recognize fan
20 engagement initiatives not only through game-day experiences, but also through sharing
21 information on social media, interactive websites, and mobile applications in today’s
22 hyperconnected world (Eigenraam et al., 2021; Harmeling et al., 2017). From a theoretical
23 standpoint, awareness involves linking fan engagement initiatives to consumers’ memory (Keller,

1 2003) and acts as a cognitive operant resource to process the product information they have
2 (Hollebeek et al., 2019). According to social exchange theory (Blau, 1964), when individuals
3 receive valuable resources from an activity, they in turn invest their resources in engaging with
4 the activity. Therefore, consumer awareness as a cognitive resource derived from fan
5 engagement initiatives will provide a motivation for fans to engage in value-adding behaviors.

6 In spectator sport, awareness of fan engagement initiatives helps consumers personally use
7 both task-based and entertaining information because these initiatives include valuable
8 information for each consumer by answering their questions (Harrigan et al., 2020). This
9 explanation suggests that if sport fans are aware of the information on both informative and
10 entertaining initiatives, they are likely to engage in value-adding behaviors due to the personally
11 valuable information accrued from these initiatives. Thus, we hypothesize the relationship
12 between individuals' awareness of fan engagement initiatives and fan engagement behavior as
13 follows:

14 H2: Awareness of fan engagement initiatives positively influences fan engagement behavior.

15 **Sport consumption outcomes.** Fan engagement behavior boosts transactional sport
16 consumption outcomes such as sport media viewing and attendance frequency (Fathy et al.,
17 2021; Yoshida et al., 2014). First, highly engaged sport fans are more likely to watch games on
18 TV (or via the Internet). Watching mediated sport is meaningful and engaging because it
19 generates positive emotions after dealing with daily hassles (Yoshida et al., 2023). According to
20 Gantz and colleagues' idea of sport fanship (Gantz & Lewis, 2014; Gantz & Wenner, 1995), most
21 fans watch games at home, enjoy games on large screen TV, and focus on following the action
22 while viewing. In recent years, "[m]any fans turn to newer media screens while watching sports"
23 because "[n]ewer media allow fans to extend their fanship in different and meaningful ways"

1 (Gantz & Lewis, 2014, p.26). Through media consumption, spectators vicariously engage in
2 imaginary interactions with players, coaches, and referees (Holt, 1995), and newer media screens
3 enhance the various experience of watching sport (Gantz & Lewis, 2014). Consistent with this
4 view, we anticipate that fans who are high in fan engagement behavior will be more strongly
5 motivated to watch mediated games in today's digital media environment. Thus, we posit the
6 following hypothesis.

7 H3: Fan engagement behavior positively influences media viewing frequency.

8 We also contend that fan engagement behavior positively influences stadium attendance
9 frequency. Fan engagement behavior includes a variety of preparatory (pre-viewing) activities
10 such as checking websites (fan learning), integrating an upcoming game in conversations with
11 others (fan resource integration), and wearing team apparel (ritualistic fan behavior). These
12 preparatory activities are goal-directed, observable specifically among fanatical and devoted
13 fans, and motivate them to attend sporting events (Holt, 1995; Hunt et al., 1999). Furthermore,
14 highly engaged fans expand their repertoire of engagement behavior (van Doorn et al., 2010). In
15 spectator sport, a wide array of fan engagement behavior (e.g., fan resource integration,
16 ritualistic fan behavior, and management cooperation) is related to fan experiences at stadiums.
17 Engaging in these behaviors can provide fans with high levels of enjoyment (Holt, 1995), enable
18 them to have favorable attitudes toward stadium consumption (Bristow & Sebastian, 2001), and
19 stimulate their desire to continue attending games (Yoshida et al., 2014). From this logic, we
20 propose the following hypothesis:

21 H4: Fan engagement behavior positively influences attendance frequency.

22 **Well-being outcome.** We also posit that fan engagement behavior positively affects human
23 flourishing, defined as positive functioning that arises from meaningful life, mental health, and

1 quality social relationships (Diener et al., 2010). In this study, we view flourishing as a proxy
2 variable for psychological well-being because it represents a comprehensive construct of overall
3 well-being (Diener et al., 2010).

4 Theoretically, “aspects of cognition, affect, and behavior are associated with subjective
5 well-being as a result of engaging in recreational activities” (Sirgy et al., 2017, p. 207). This
6 assumption is based on the bottom-up theory of subjective well-being (Newman et al., 2014) that
7 suggests overall well-being is entirely summed from individual life domains such as leisure,
8 family, work, and health. Previous research has shown that leisure activities, including spectator
9 sport consumption, serve as a core ingredient for overall well-being (Inoue et al., 2020; Newman
10 et al., 2014). One rationale for this relationship is the fulfillment of psychological needs (e.g.,
11 autonomy, meaning, mastery, affiliation, and detachment-recovery) when engaging in leisure
12 activities acts as a significant pathway to enhanced overall well-being (Newman et al., 2014). In
13 empirical research, leisure engagement has been found to exert a positive influence on overall
14 well-being (Kuykendall et al., 2015). Consistent with the bottom-up perspective, we consider the
15 influence of fan engagement behavior on flourishing as a bottom-up effect. Thus, we hypothesize
16 the following:

17 H5: Fan engagement behavior positively affects flourishing.

18 **Control variables and replication effects.** In addition to the hypothesized effect of fan
19 engagement behavior on flourishing, other variables may affect this well-being outcome. For
20 example, life domain satisfaction, defined as satisfaction with key life domains (e.g., social life,
21 family, work, and health), has been found to enhance individuals’ overall well-being (Sato et al.,
22 2017; Yoshida et al., 2023), indicating that satisfaction with life domains will be associated with
23 flourishing. Therefore, we control for satisfaction with other key life domains (i.e., social life,

1 leisure life, family life, work life, health, and self-actualization). Also, consistent with previous
2 research, we replicate the impact of team identification on media viewing frequency (Heere et
3 al., 2011), attendance frequency (Yoshida et al., 2021), and flourishing (Wann et al., 2017).

4 **Method**

5 **Research setting and data collection.** Study 2 was conducted during the 2022 season of
6 Japanese professional baseball. Working with a Japanese major Internet research company
7 (Macromill, Inc.), we collected data from local residents within the franchise areas of five teams
8 including both winning and losing teams. To increase the generalizability of our findings, we
9 used different baseball teams than Study 1.

10 Data were gathered from panel surveys at two time periods. In June 2022, the survey
11 company sent invitation emails to approximately 50,000 research panels who lived in the market
12 areas (i.e., Hokkaido, Chiba, Saitama, Osaka, and Fukuoka) of the five teams. To reach our target
13 sample, we used two screening questions: (a) following one of the five teams and (b) attending
14 games of the favorite team in the past twelve months. These screening questions continued until
15 5,000 respondents met these criteria. From June 24th to June 26th, the first survey was then
16 carried out among the 5,000 individuals. As a result, a total of 1,124 respondents (approximately
17 220 fans of each team) participated in the first survey and answered questions regarding their
18 demographic characteristics and the predictors of fan engagement behavior (team identification
19 and awareness of fan engagement initiatives). In Study 2, we attempted to reduce potential
20 problems with recall inaccuracy by limiting the time period (twelve months), whereas the time
21 period used in Study 1 was three years (2019-2021) because the COVID-19 pandemic did not
22 allow people to attend games specifically in 2020.

23 After the 2022 season was over (five months later), the survey company asked the same

1 research panels to rate their fan engagement behavior, media viewing frequency, attendance
2 frequency, flourishing, and life domain satisfaction over three days. In the second stage of data
3 collection, we used the following three questions to further enhance the accuracy of recall for fan
4 engagement behavior: (a) following the same sport team chosen in the first data collection, (b)
5 the number of games watched on television or the Internet in the current season ($M = 43.40$
6 ± 42.36), and (c) the number of games attended in the current season ($M = 6.64 \pm 12.94$).

7 This sampling procedure resulted in the collection of 635 subjects. Of these, 53 were
8 rejected because many items were not completed, yielding a usable response rate of 51.8% ($n =$
9 582). Of the respondents, 68.6% were male. The average age along with the standard deviation
10 of the respondents was 47.02 ± 12.81 years. The sample consisted of those aged 18–19 (.3%), 20–
11 29 (9.6%), 30–39 (20.3%), 40–49 (26.1%), 50–59 (26.6%), and ≥ 60 years (17.0%). These
12 sample characteristics are comparable to those in Study 1, indicating that the Study 2 sample also
13 represents the overall population for Japanese spectator sport in terms of age and gender.

14 **Measures.** Team identification was operationalized using a six-item scale adapted from
15 Mael and Ashforth's (1992) organizational identification scale. Five items measuring awareness
16 of fan engagement initiatives were adapted from Harrigan et al.'s (2020) scale which captures
17 consumer-company communication initiatives and consumer-to-consumer conversation
18 initiatives. The wording was modified to reflect fan engagement initiatives from the consumer's
19 perspective. These two constructs were measured in the first survey.

20 The second survey measured fan engagement behavior, its consequences, and the control
21 variables. As Study 1 did not strongly support the discriminant validity between fan learning and
22 ritualistic fan behavior, we added one item ("I read posts, forum threads, and comments of others
23 about [team name] on the Internet") to the fan learning measure because this item assesses

1 Internet use which is applicable to all respondents. For the other dimensions of fan engagement
2 behavior, the same items used in Study 1 were administered in Study 2.

3 To measure sport media viewing, we asked the respondents about the number of games
4 watched on television or the Internet for their favorite teams in the season (Yoshida et al., 2023).
5 Following previous sport consumer research, we operationalized attendance frequency by asking
6 the subjects to report the number of games attended in the season (Yoshida et al., 2018).
7 Furthermore, we included the Japanese version of Diener et al.'s (2010) eight-item flourishing
8 scale (Sumi, 2014). As control variables, we measured satisfaction with six life domains (social
9 life, leisure life, family life, work life, health, and self-actualization; Sato et al., 2017; Yoshida et
10 al., 2023) using an eleven-point response scale, ranging from "strongly dissatisfied (0)" to
11 "strongly satisfied (10)." The items for the other latent constructs were operationalized utilizing a
12 seven-point Likert-type scale, ranging from "strongly disagree (1)" to "strongly agree (7)."

13 **Results**

14 **Measurement model.** First, using Muthén and Muthén's Mplus 7.31, we performed a
15 confirmatory factor analysis to assess the construct validity of the nine latent constructs (see
16 Table 4). The measurement model demonstrated excellent model fit statistics: $\chi^2/df = 2.50$,
17 comparative fit index = .95, Tucker Lewis index = .94, root mean square error of approximation
18 = .051, standardized root mean square residual = .034. All constructs showed convergent validity
19 according to their composite reliability and average variance extracted values (Bagozzi & Yi,
20 1988; Fornell & Larcker, 1981). Further, an examination of the Fornell-Larcker criterion, which
21 compares the average variance extracted values with the squared correlations between pairs of
22 the constructs (Fornell & Larcker, 1981), indicated that discriminant validity was established for
23 all cases with one exception (see Table 5). The average variance extracted value of ritualistic fan

1 behavior was .67, which was equal to the square of its correlation with fan knowledge feedback
2 (.67). Therefore, we additionally performed the Wald Test of Parameter Constraints and
3 compared a model in which the correlation between these two constructs to be equal to 1.00 with
4 an unconstrained model in which the correlation was freely estimated (Anderson & Gerbing,
5 1988). The result showed that the unconstrained model was significantly better than the
6 constrained model (Wald $\chi^2 [1] = 135.75, p < .01$). Collectively, we found evidence for
7 discriminant validity.

8 **Structural model.** In hypothesis testing, we modeled fan engagement behavior as a
9 second-order construct reflected by the six first-order dimensions (see Figure 4). This integrative
10 way has been supported by previous research (Itani et al., 2019; Kumar & Pansari, 2016) that
11 suggests customer engagement behavior is a second-order construct consisting of first-order
12 dimensions related to specific engagement behaviors. We found the first-order dimensions of fan
13 engagement significantly loaded onto its unobserved second-order construct, ranging from .81
14 to .93. The fit indices for this structural model were acceptable ($\chi^2/df = 2.49$, comparative fit
15 index = .92, Tucker Lewis index = .92, root mean square error of approximation = .051,
16 standardized root mean square residual = .088).

17 The results indicated that team identification ($t_1; \beta = .47, p < .01$) and awareness of fan
18 engagement initiatives ($t_1; \beta = .12, p < .05$) significantly predicted fan engagement behavior (t_2),
19 in support of H1 and H2. Also, fan engagement behavior (t_2) was found to be positively
20 associated with media viewing frequency ($t_2; \beta = .21, p < .01$), attendance frequency ($t_2; \beta = .24,$
21 $p < .01$), and flourishing ($t_2; \beta = .37, p < .01$), whereas the influences of team identification (t_1)
22 on these outcome variables were not significant. Thus, we found support for H3, H4, and H5.
23 Moreover, we examined whether the inclusion of life domain satisfaction affected the findings.

1 The results indicated leisure life satisfaction (t_2 ; $\beta = .19$, $p < .01$), family life satisfaction (t_2 ; β
2 = $.21$, $p < .01$), and self-actualization satisfaction (t_2 ; $\beta = .24$, $p < .01$) were positively associated
3 with flourishing. To account for the variations in the outcome variables, we evaluated R^2 values.
4 The R^2 values for fan engagement behavior, media viewing frequency, attendance frequency, and
5 flourishing were $.30$, $.04$, $.05$, and $.56$, respectively.

6 **Indirect effects.** Our hypothesized model suggests that fan engagement behavior mediates
7 the relationship between the predictor and outcome variables. Thus, we tested this mediation
8 mechanism using the bootstrapping method based on 5,000 resamples (Preacher & Hayes, 2008;
9 see Table 6). The 95% confidence intervals for the indirect effects of team identification (t_1) on
10 media viewing frequency (t_2), attendance frequency (t_2), and flourishing (t_2) through fan
11 engagement behavior (t_2) did not contain zero ($CI_{\text{media viewing frequency}} = .787\text{-}5.282$; $CI_{\text{attendance$
12 $\text{frequency}} = .067\text{-}1.773$; $CI_{\text{flourishing}} = .101\text{-}.226$), indicating these indirect effects were significant.
13 Similarly, the 95% confidence intervals for the indirect effects of awareness of fan engagement
14 initiatives (t_1) on the same three outcome variables excluded zero ($CI_{\text{media viewing frequency}} = .114\text{-}$
15 1.806 ; $CI_{\text{attendance frequency}} = .033\text{-}.554$; $CI_{\text{flourishing}} = .004\text{-}.069$), indicating there are sequential
16 relationships between awareness of fan engagement initiatives (t_1), fan engagement behavior (t_2),
17 and the three outcome variables (t_2).

18 **Discussion of Study 2**

19 In Study 2, the results supported that the six dimensions were an accurate representation of
20 different aspects of fan engagement behavior and could be regarded as distinct constructs from
21 other psychological constructs (team identification and flourishing). Further, in hypothesis
22 testing, we modeled fan engagement behavior as a second-order latent construct that played a
23 fully mediating role in the relationship between the predictor and outcome variables. That is, as

1 First, previous studies have examined specific aspects of fan engagement behavior,
2 ranging from two to four dimensions (Huettermann & Kunkel, 2022; Jones et al., 2019; Yoshida
3 et al., 2014). Existing conceptualizations and measures are incomplete because SDL-informed
4 factors (e.g., fan learning, fan resource integration, and fan knowledge sharing) and sport-
5 specific factors (e.g., ritualistic fan behavior and flow experience) have been examined
6 independently in prior studies (Huettermann & Kunkel, 2022; Kim & Ko, 2019; McDonald &
7 Karg, 2014). In this research, we provided a more comprehensive conceptualization of fan
8 engagement behavior based on SDL-informed customer engagement (Huettermann et al., 2022;
9 Hollebeek et al., 2019) and fans' unique behavioral responses (Kim & Ko, 2019; McDonald &
10 Karg, 2014). Further, we validated a multidimensional scale representing our theoretical
11 reconceptualization and highlighted its nomological validity using data from two different points
12 of time. Fan resource integration, fan learning, ritualistic fan behavior, and flow experience are
13 related to the consumption of the core sport product and reflect sport-specific dimensions of
14 customer engagement that are properly grounded in the professional sport context. Our scale is a
15 comprehensive tool for assessing the behavioral characteristics of fan engagement in spectator
16 sport.

17 Second, our results revealed sport consumption outcomes (media viewing frequency and
18 attendance frequency) were more strongly influenced by fan engagement behavior than by team
19 identification. Theoretically, fan engagement behavior enables fans not only to develop
20 intellectual, cultural, skillful, and social resources (e.g., fan learning, ritualistic fan behavior,
21 flow experience, management cooperation, and fan knowledge feedback), but also to integrate
22 these operant resources as a critical capability (e.g., fan resource integration) that is required for
23 enduring and meaningful sport consumption (Huettermann et al., 2022). While team

1 identification may act as a social resource (e.g., group membership and a sense of belonging),
2 fan engagement behavior helps individuals build more intangible operant resources that can be
3 used to create rich sport consumption experiences. In this respect, we extend fan engagement
4 research by explaining the reason why fan engagement behavior plays a mediating role in the
5 relationship between team identification and sport consumption.

6 Third, in Study 2, we provided evidence supporting the positive influence of fan
7 engagement behavior on human flourishing in everyday life. Our results indicated that fan
8 engagement behavior was the dominant factor in enhancing flourishing, while three life-domain
9 satisfaction dimensions (leisure life, family life, and self-actualization) were also significantly
10 associated with flourishing. This reinforces recent findings that indicate specific aspects of sport
11 consumption (behavior) rather than team identification itself (cognition) contribute to well-being
12 (Delia et al., 2022; Yoshida et al., 2023). While team identification reflects the need to belong
13 and be self-confident, fan engagement behavior not only satisfies these needs, but also fulfills
14 additional psychological needs such as autonomy, meaning, and mastery and eventually
15 contributes to people's well-being (Newman et al., 2014). Overall, our empirical evidence
16 extends past studies (Delia et al., 2022; Yoshida et al., 2023) by showing how team identification
17 influences well-being through enhancing fan engagement behavior. Using this theoretical
18 implication, sport management researchers can develop and test hypotheses about the
19 relationship between fan engagement behavior and different types of well-being such as hedonic,
20 eudaimonic, and social well-being (Inoue et al., 2020; Yoshida et al., 2023). The current research
21 provides opportunities for future studies to examine how fan engagement behavior enables sport
22 fans to achieve higher levels of well-being in life domains.

23 **Managerial Implications**

1 Our new scale provides sport teams with a practical tool to assess fan engagement
2 behavior in a comprehensive way. Such diagnostic information can be integrated into the
3 management of fan engagement behavior by implementing informative and entertaining
4 (experiential) initiatives. For example, informative initiatives will be effective in facilitating the
5 three foundational dimensions of fan engagement behavior (Hollebeek et al., 2019) because these
6 dimensions (i.e., fan learning, fan resource integration, and fan knowledge feedback) are
7 primarily information-driven. We urge sport teams to use informative fan engagement initiatives
8 such as mobile news delivery, social media conversations specifically related to star players and
9 team success, and online customer reviews and surveys, in order to increase the foundational
10 dimensions of fan engagement behavior (Weimar et al., 2022). In today's digital world, sport
11 teams can develop capabilities for utilizing informative initiatives through Internet, social media
12 platforms, and new technologies such as advanced mobile applications (e.g., Yinzcam) and
13 customer journey mapping software (e.g., LAVA). Given the post-pandemic return to sports and
14 changing nature of fan behavior, the importance of these engagement initiatives cannot be
15 understated since many fans intend on experiencing “a hybrid world of “live” experiences
16 whereas virtual experiences create novel ways for fans to engage in their favorite sporting event
17 experiences” (Lefton, 2021).

18 The other three dimensions (i.e., ritualistic fan behavior, flow experience, and management
19 cooperation) of fan engagement behavior are experience-driven and reflect the benefits that stem
20 from the three foundational dimensions of fan engagement behavior (Hollebeek et al., 2019). Of
21 particular importance is that sport teams engage their fan base by offering social interaction
22 opportunities in fan communities both virtually and physically (Yoshida et al., 2014). In virtual
23 environments, Annamalai et al.'s (2021) social media framework provides useful classifications

1 of content type (e.g., information, entertainment, social, and remuneration) and content vividness
2 (e.g., text, photo, video, and link) and identifies social content, photos, and videos as significant
3 drivers of sport fan engagement behavior. Thus, we recommend that sport teams should facilitate
4 fan-to-fan social interactions (e.g., online dialogues and an exchange of questions and answers)
5 by allowing fans to share team-related photos and videos (e.g., visual content related to star
6 players and team success; Weimar et al., 2022).

7 In physical (stadium) environments, sport teams need to be aware that sport fans can
8 engage in flow experiences by watching sport in a clean, comfortable, and exciting stadium
9 environment where fans can fully focus their attention on game actions (Wakefield et al., 1996).
10 An additional managerial implication that stems from our findings and extends Funk's (2017)
11 sport experience design (SX) framework is that sport teams should use scoreboards, digital
12 signage, mobile devices, and other new technologies (e.g., on-field sport monitoring systems) not
13 only as promotional tools associated with sponsorship activation and ancillary services, but also
14 as complementary tools that are tailored to real-time on-field performance in order to enhance
15 fans' flow experiences. Further, the incorporation of plazas into new sport facility design has
16 become a recent trend that further highlights the importance of "social" spaces as a means of fan
17 engagement. Specifically, plazas have been incorporated into new facility projects in the NHL
18 (Edmonton & Detroit), NFL (Las Vegas & Minneapolis), and MLB (Chicago & Atlanta) where
19 they act as community centers for the team and are one of the most coveted social gathering
20 spaces both in-season and during non-sporting events in the offseason (Muret, 2016).

21 Our results also suggest that the outcome of fan engagement behavior is more than just the
22 consumption of spectator sport. Practitioners need to find a way to enhance human flourishing
23 through fan engagement behavior. For example, creating a positive brand image associated with

1 engaging and meaningful fan behaviors will enable sport teams to establish a socially desirable
2 fan base and, in a broader sense, to contribute to the sustainable development goals (SDGs),
3 specifically Goal 3: good health and well-being (United Nations, 2015). Merely looking at
4 traditional sport marketing outcomes such as stadium attendance and media consumption might
5 result in missed opportunities for sport teams to promote spectator sport consumption in today's
6 complex society (Inoue et al., 2020). Fan engagement behavior is a key factor for enhancing
7 fans' well-being in a meaningful and socially impactful way because highly engaged fans can
8 find the personal (e.g., mental health) and social (e.g., social justice) meanings of spectator sport
9 by following their favorite sport teams (Delia et al., 2022). An integration of fan engagement
10 behavior and well-being will help practitioners have an accurate understanding of how and why
11 spectator sport contributes to people's well-being in their lives.

12 **Limitations and Directions for Future Research**

13 This research has limitations that warrant future research. First, we carried out research in
14 deductive reasoning to develop a theory-based fan engagement scale. We did not undertake
15 qualitative research to inductively explore sport fans' views on their engagement behavior. While
16 we generated the initial survey items by performing a systematic review of the relevant literature,
17 sport fans may have additional unique behavioral characteristics and patterns during and after the
18 COVID-19 pandemic. For example, virtual reality and player-tracking data will help fans
19 enhance their flow and learning experiences whereas anthems, fight songs, ceremonies, and
20 group movements in stadium environments will boost ritualistic fan behavior. Our six-factor
21 model represents general aspects of fan engagement behavior. Considering that customer
22 engagement is context-specific (Brodie et al., 2011; Hollebeek et al., 2019), qualitative research
23 is needed to further explore and identify factors that reflect unique sport contexts and act as an

1 additional dimension of fan engagement behavior.

2 Second, we measured fan engagement behavior retrospectively. Although we used several
3 screening questions to ensure high recall accuracy of fan engagement behavior in the past, our
4 retrospective questionnaires did not allow us to measure sport fans' dynamic engagement
5 behavior in real time. Future research needs to examine whether the proposed six dimensions of
6 fan engagement behavior based on retrospective experiences are different from or similar to
7 those based on real-time, dynamic experiences.

8 Third, our scale was developed only in the team sport context. Future studies need to apply
9 our scale to the engagement behavior of fans who follow individual sports (e.g., golf, tennis,
10 cycling, and track and field). In our research, the main object to engage was not an individual
11 athlete, but a sport team. Specifically, the dimension of ritualistic fan behavior needs further
12 development in individual sport settings because it focuses primarily on fan rituals in fan
13 communities that surround professional sport teams.

14 Fourth, although we found a positive relationship between fan engagement behavior and
15 human flourishing, we encourage scholars to further examine how fan engagement behavior
16 contributes to individuals' work and civic engagement in the occupational and social life
17 domains. For example, research suggests that positive emotions associated with spectator sport
18 enhance fans' job engagement and job performance in the work domain (Gkorezis et al., 2016).
19 Also, volunteering at spectator sport events has been found to be effective in facilitating civic
20 engagement in local communities (e.g., support for and participation in community activities;
21 Bang et al., 2022). A suggestion from these findings is that future research should focus on the
22 role of fan engagement behavior as a source of work and civic engagement in a broader context.

23

Conclusion

1 The central thesis of this research is that fan engagement behavior can be conceptualized
2 and measured as a multidimensional construct based on SDL-informed customer engagement
3 and the experiential benefits associated with spectator sport. In conclusion, the foundational
4 dimensions of fan engagement behavior (fan learning, fan resource integration, and fan
5 knowledge feedback), combined with the benefit-related dimensions in the spectator sport
6 context (ritualistic fan behavior, management cooperation, and flow experience), result in further
7 improvement not only to extend previous models (Huettermann et al., 2022; Yoshida et al.,
8 2014), but also to better enhance sport consumption and well-being outcomes. Our theory-based
9 scale provides conceptual and empirical clarity to guide future research as well as actionable
10 guidance to sport marketing practitioners.

11

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Figure 1
Conceptual framework

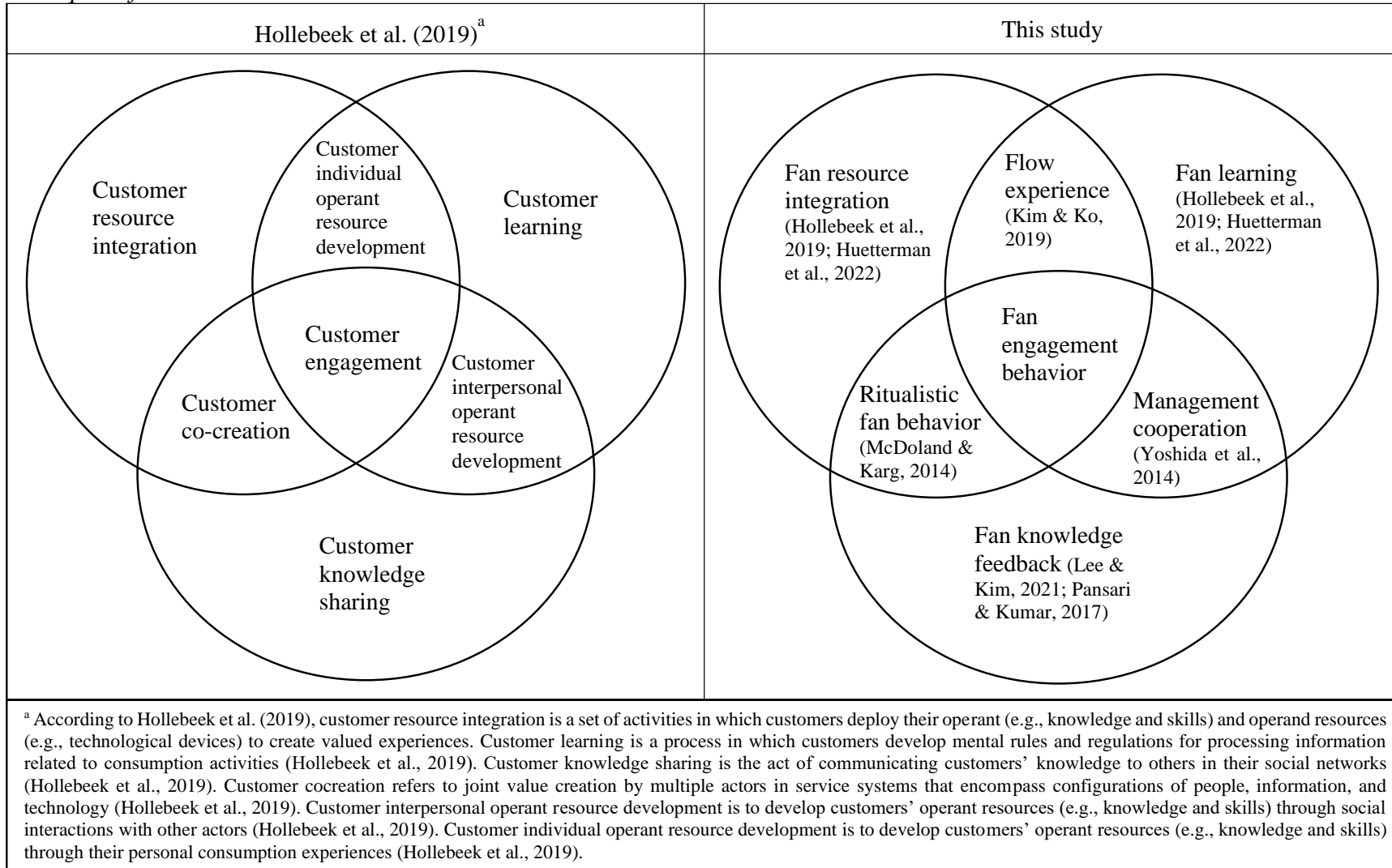


Figure 2
Search strategy for systematic review in item generation

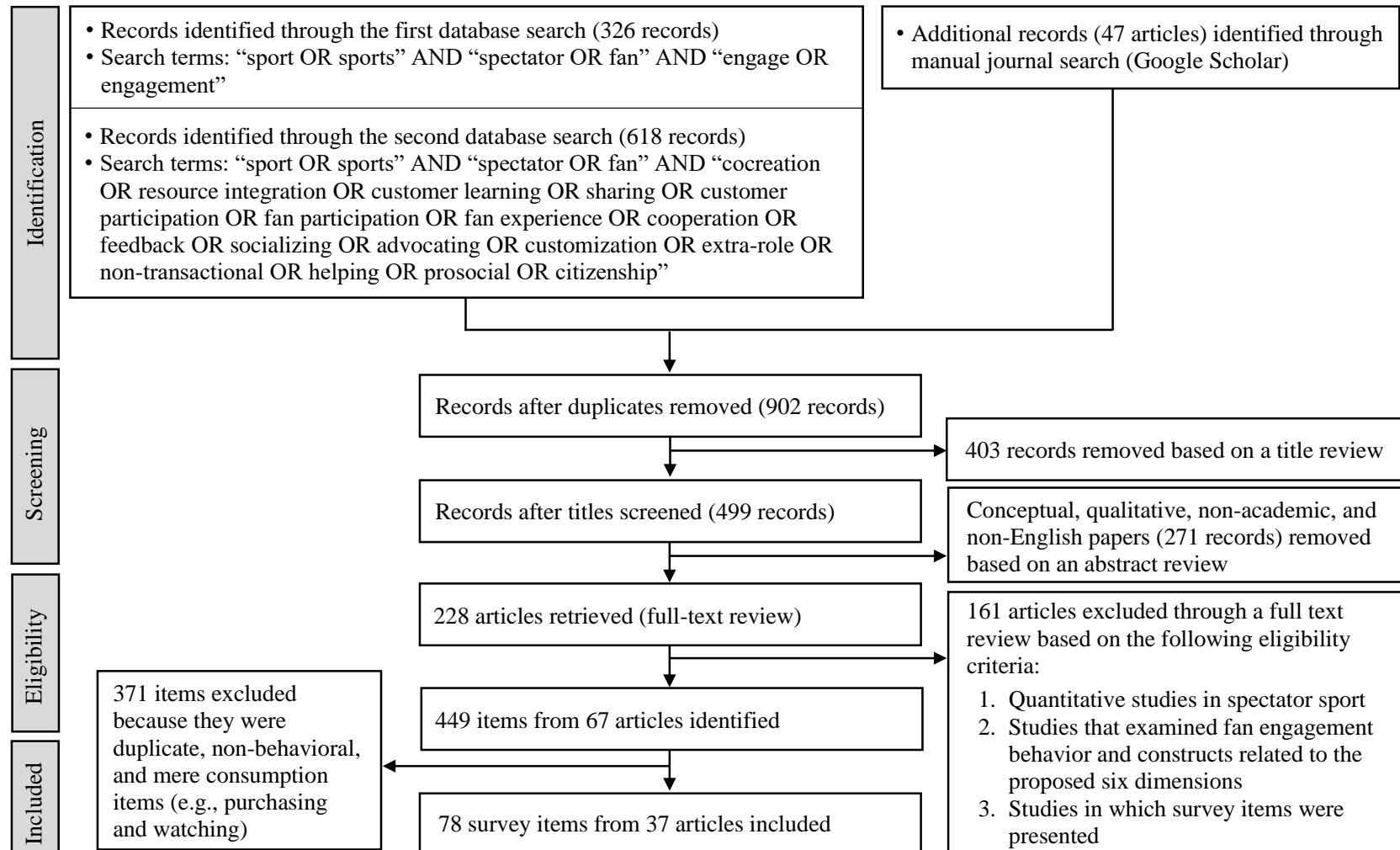


Table 1
The confirmatory factor analysis results in Study 1

Construct	Item	$\lambda_{\text{baseball}}^a$	$\lambda_{\text{soccer}}^b$
Fan learning (CR _{baseball} = .86; AVE _{baseball} = .68; CR _{soccer} = .82; AVE _{soccer} = .60)			
1.	I regularly read sports news about what might take place in the upcoming game.	.83	.76
2.	I regularly track the statistics of specific players.	.84	.81
3.	I read posts, forum threads, and comments of others about [team name] on social media.	.80	.75
Fan resource integration (CR _{baseball} = .91; AVE _{baseball} = .71; CR _{soccer} = .89; AVE _{soccer} = .68)			
1.	I use my knowledge to engage in conversations with other fans about [team name].	.83	.85
2.	I bring up things I have seen at [team name]'s games in conversations with other fans.	.81	.88
3.	I use my knowledge to analyze the performance of [team name].	.89	.81
4.	I spend a significant amount of time discussing issues related to [team name] with friends.	.85	.76
Ritualistic fan behavior (CR _{baseball} = .89; AVE _{baseball} = .67; CR _{soccer} = .92; AVE _{soccer} = .73)			
1.	I regularly wear or hold something lucky before watching the games of [team name].	.86	.87
2.	I wear team apparel on a regular basis.	.79	.88
3.	I regularly participate in communal activities with other fans of [team name].	.81	.86
4.	I decorate (or paint) any part of my body with team colors when attending the games of [team name].	.81	.83
5.	I sing or chant with other members of the crowd at [team name]'s games. ^c	—	—
Flow experience (CR _{baseball} = .89; AVE _{baseball} = .74; CR _{soccer} = .91; AVE _{soccer} = .78)			
1.	When watching [team name]'s games, I watch every play of every game.	.84	.89
2.	When I watch [team name]'s games, time goes by very quickly.	.83	.85
3.	I am absorbed intensely when watching the games of [team name].	.91	.91
Management cooperation (CR _{baseball} = .84; AVE _{baseball} = .64; CR _{soccer} = .87; AVE _{soccer} = .70)			
1.	I try to work cooperatively with [team name] when attending the games of [team name].	.76	.81
2.	I do things to make [team name]'s event management easier.	.85	.86
3.	While at [team name]'s game, the employees of the team get my full cooperation.	.79	.83
4.	I strictly obey the rules of how spectators should behave at the stadium. ^c	—	—
Fan knowledge feedback (CR _{baseball} = .91; AVE _{baseball} = .77; CR _{soccer} = .95; AVE _{soccer} = .85)			
1.	I often offer my ideas to [team name] for developing new products or services related to the team.	.85	.92
2.	If I have a useful idea on how to improve [team name]'s products or services, I let the team know about it.	.89	.95
3.	When I experience a problem at the games of [team name], I let the team know about it.	.90	.91

Notes. CR = composite reliability, AVE = average variance extracted.

^a χ^2 (df) = 352.05 (155), $p < .01$; $\chi^2/df = 2.27$; comparative fit index = .96; Tucker Lewis index = .95; root mean square error of approximation = .063; standardized root mean square residual = .041.

^b χ^2 (df) = 535.76 (155), $p < .01$; $\chi^2/df = 3.46$; comparative fit index = .93; Tucker Lewis index = .91; root mean square error of approximation = .090; standardized root mean square residual = .057.

^c Two items were eliminated because their factor loadings were less than .70 (Hair et al., 2010).

Table 2

Correlations, the average variance extracted values, and descriptive statistics among professional baseball (n = 319) and professional soccer (n = 301) spectators in Study 1

Construct	ϕ matrix					
	1	2	3	4	5	6
1. Fan learning	.82/.77	.76	.82	.62	.65	.70
2. Fan resource integration	.80	.84/.82	.59	.48	.78	.41
3. Ritualistic fan behavior	.64	.64	.82/.85	.77	.55	.84
4. Flow experience	.70	.68	.57	.86/.88	.52	.75
5. Management cooperation	.77	.78	.69	.66	.80/.84	.41
6. Fan knowledge feedback	.58	.55	.80	.43	.59	.88/.92
M _{professional baseball}	4.42	4.01	4.10	3.46	4.27	3.15
SD _{professional baseball}	1.55	1.74	1.54	1.72	1.49	1.74
M _{professional soccer}	4.09	4.20	3.49	4.61	4.45	3.42
SD _{professional soccer}	1.57	1.51	1.74	1.44	1.52	1.71

Notes. We obtained correlations from ϕ matrix using Muthén and Muthén's Mplus 7.31. The correlation coefficients for the baseball sample are presented in the lower triangle of the ϕ matrix whereas the correlation coefficients for the soccer sample are depicted in the upper triangle of the ϕ matrix. The square root of the average variance extracted value for each latent construct in the baseball (left) and soccer (right) settings is shown in boldface italic on the diagonal. The mean scores (M) and standard deviations (SD) for the six dimensions were calculated using IBM SPSS Statistics 28.0.

Table 3

Assessing concurrent validity in Study 1: Correlations (t-values)

Proposed dimensions	Criterion variable: active brand engagement (Keller, 2003)	
	Professional baseball (n = 319)	Professional soccer (n = 301)
Fan learning	.77**(24.85)	.81**(27.21)
Fan resource integration	.73**(22.86)	.77**(27.38)
Ritualistic fan behavior	.73**(21.75)	.86**(42.55)
Flow experience	.72**(22.30)	.61**(14.49)
Management cooperation	.71**(19.74)	.70**(20.19)
Fan knowledge feedback	.55**(12.43)	.70**(20.46)

Notes. t-values are given in parentheses. Correlations were taken from ϕ matrix of a confirmatory factor analysis composed of the proposed six dimensions and team brand engagement (Keller, 2003).

** p < .01

Figure 3

Hypothesis development

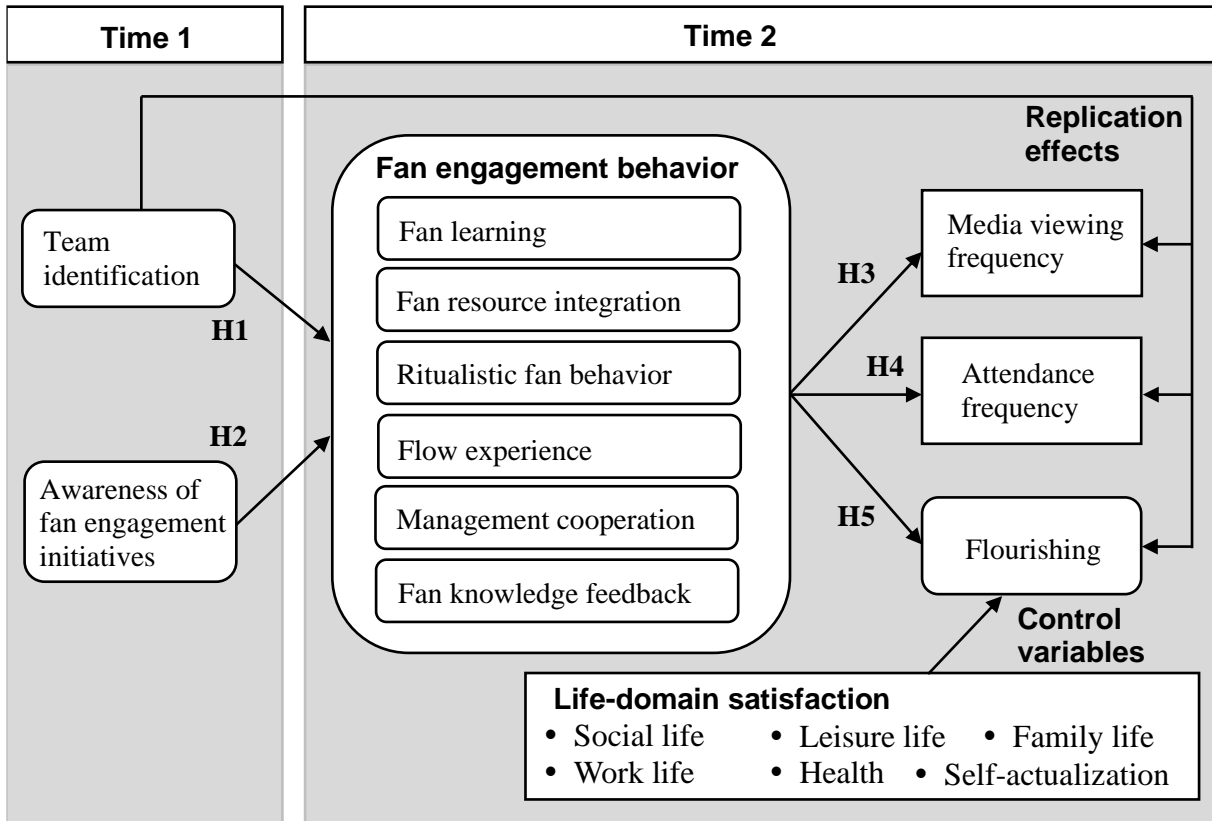


Table 4

The confirmatory factor analysis results in Study 2 (n = 582)

Construct	Item	λ
Team identification (CR = .92, AVE = .67)		
	1. I am very interested in what others think about [team name].	.76
	2. When someone criticizes [team name], it feels like a personal insult.	.80
	3. When I talk about [team name], I usually say “we” rather than “they.”	.85
	4. [team name]’s successes are my successes.	.89
	5. When someone praises [team name], it feels like a personal compliment.	.84
	6. If a story in the media criticized [team name], you would feel embarrassed.	.76
Awareness of fan engagement initiatives (CR = .95, AVE = .80)		
	1. [team name] maintain regular contact with fans.	.87
	2. [team name] share and exchange, in a two-way manner, information with fans.	.91
	3. [team name] provide fans with opportunities to have social interactions with other fans at the stadium.	.90
	4. [team name] enable fans to have interactive communications with each other through digital media.	.91
	5. [team name] securely use fans’ information as a basis for communicating with fans.	.89
Fan learning (CR = .87, AVE = .62)		
	1. I regularly read sports news about what might take place in the upcoming game.	.69
	2. I regularly track the statistics of specific players.	.78
	3. I read posts, forum threads, and comments of others about [team name] on social media.	.84
	4. I read posts, forum threads, and comments of others about [team name] on the Internet. ^a	.83
Fan resource integration (CR = .92, AVE = .75)		
	1. I use my knowledge to engage in conversations with other fans about [team name].	.87
	2. I bring up things I have seen at [team name]’s games in conversations with other fans.	.86
	3. I use my knowledge to analyze the performance of [team name].	.87
	4. I spend a significant amount of time discussing issues related to [team name] with friends.	.87
Ritualistic fan behavior (CR = .89, AVE = .67)		
	1. I regularly wear or hold something lucky before watching the games of [team name].	.81
	2. I wear team apparel on a regular basis.	.79
	3. I regularly participate in communal activities with other fans of [team name].	.83
	4. I decorate (or paint) any part of my body with team colors when attending the games of [team name].	.85
Flow experience (CR = .88, AVE = .72)		
	1. When I watch [team name]’s games, I watch every play of every game.	.80
	2. When I watch [team name]’s games, time goes by very quickly.	.84
	3. I am absorbed intensely when watching the games of [team name].	.90
Management cooperation (CR = .87, AVE = .69)		
	1. I try to work cooperatively with [team name] when attending the games of [team name].	.78
	2. I do things to make [team name]’s event management easier.	.86
	3. When attending the games of [team name], the employees of the team get my full cooperation.	.85

Fan knowledge feedback (CR = .92, AVE = .80)

- 1. I often offer my ideas for developing new products or services related to [team name]. .89
- 2. If I have a useful idea on how to improve [team name]'s products or services, I let the team know about it. .93
- 3. When I experience a problem at the games of [team name], I let the team know about it. .86

Flourishing (CR = .94, AVE = .65)

- 1. I lead a purposeful and meaningful life. .81
- 2. My social relationships are supportive and rewarding. .78
- 3. I am engaged and interested in my daily activities. .83
- 4. I actively contribute to the happiness and well-being of others. .82
- 5. I am competent and capable in the activities that are important to me. .83
- 6. I am a good person and live a good life. .83
- 7. I am optimistic about my future. .71
- 8. People respect me. .81

χ^2 (df)	1757.01 (704)
χ^2 /df	2.50
Comparative fit index	.95
Tucker Lewis index	.94
Root mean square error of approximation	.051
Standardized root mean square residual	.034

Notes. CR = composite reliability, AVE = average variance extracted.

^a This item was additionally included in Study 2 to improve the construct validity of fan learning.

Table 5
Correlations, the average variance extracted values, and descriptive statistics in Study 2

Construct	ϕ matrix (n = 582)								
	1	2	3	4	5	6	7	8	9
1. Team identification (t ₁)	.67	.32	.20	.26	.31	.12	.12	.26	.07
2. Awareness of fan engagement initiatives (t ₁)	.57	.80	.13	.11	.11	.10	.11	.11	.06
3. Fan learning (t ₂)	.45	.36	.62	.59	.46	.48	.50	.41	.18
4. Fan resource integration (t ₂)	.51	.34	.77	.75	.66	.58	.67	.60	.23
5. Ritualistic fan behavior (t ₂)	.56	.33	.68	.81	.67	.57	.51	.67	.20
6. Flow experience (t ₂)	.34	.31	.70	.76	.75	.72	.60	.33	.24
7. Management cooperation (t ₂)	.35	.33	.71	.82	.72	.78	.69	.39	.26
8. Fan knowledge feedback (t ₂)	.51	.33	.64	.77	.82	.58	.62	.80	.17
9. Flourishing (t ₂)	.27	.24	.42	.48	.44	.49	.51	.42	.65
M	4.09	4.39	4.06	3.89	3.59	4.32	4.24	3.38	4.49
SD	1.50	1.49	1.64	1.62	1.63	1.54	1.56	1.73	1.24

Notes. Correlations (ϕ) were estimated by Muthén and Muthén's Mplus 7.31. Correlations are depicted in the lower triangle of Table 5 whereas squared correlations are presented in the upper triangle of Table 5. The average variance extracted value for each latent construct is shown in boldface italic on the diagonal. The mean scores (M) and standard deviations (SD) for the nine latent constructs were computed by IBM SPSS Statistics 28.0. All correlations are statistically significant at the .01 level.

Figure 4
Hypothesis testing in Study 2 (n = 582)

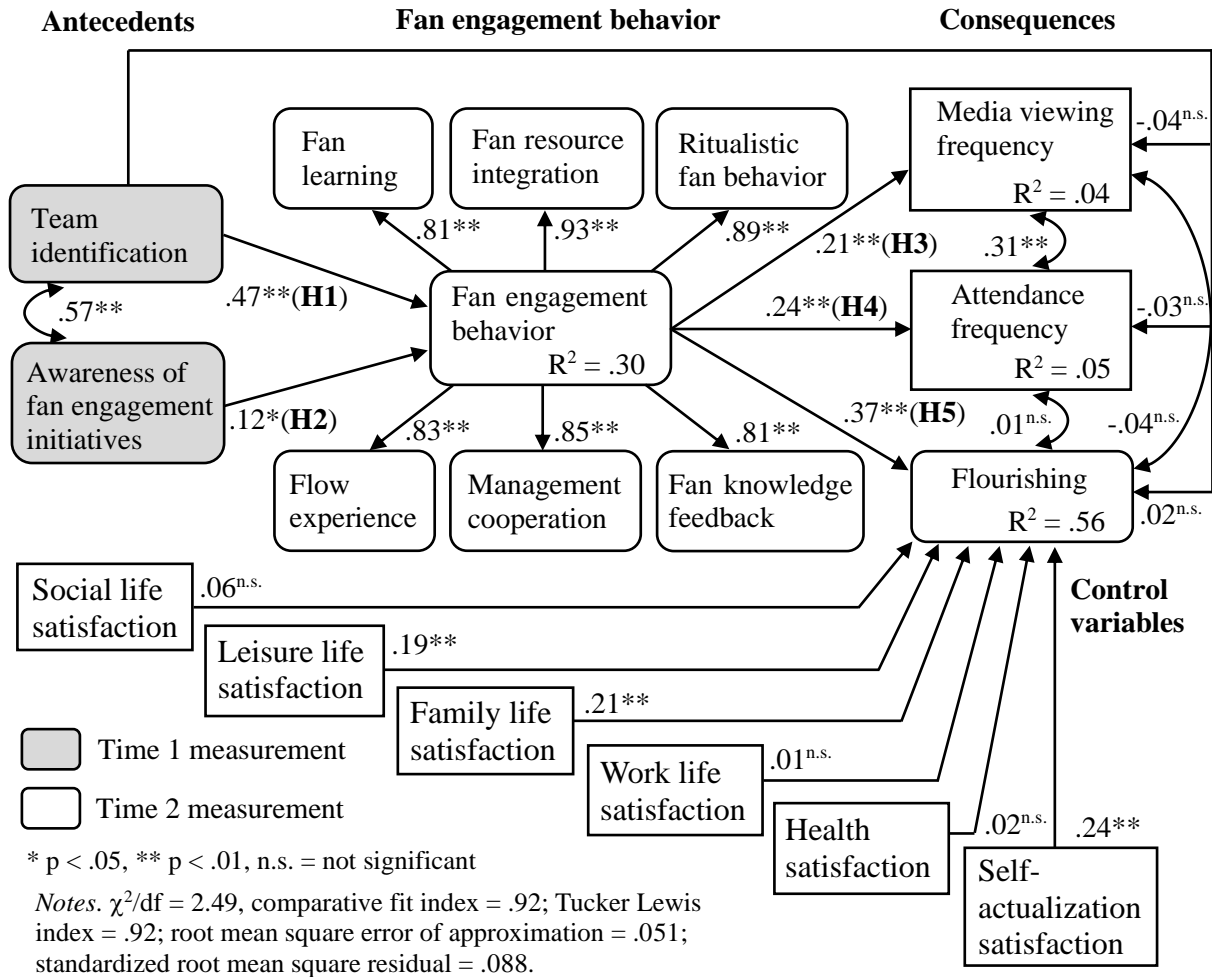


Table 6
Indirect effects for the proposed structural model in Study 2 (n = 582)

Indirect effect	Bootstrap estimate			95% CI	
	Standardized effect	Unstandardized effect	SE	Lower	Upper
Team ID → Engagement → Media viewing	.10*	3.37*	.89	.787	5.282
Team ID → Engagement → Attendance	.11*	1.12*	.27	.067	1.773
Team ID → Engagement → Flourishing	.18*	.15*	.03	.101	.226
Initiatives → Engagement → Media viewing	.03*	.73*	.41	.114	1.806
Initiatives → Engagement → Attendance	.03*	.24*	.13	.033	.554
Initiatives → Engagement → Flourishing	.04*	.03*	.02	.004	.069

Note. Team ID = team identification, Initiatives = awareness of fan engagement initiatives, Engagement = fan engagement behavior, Media viewing = media viewing frequency, Attendance = attendance frequency, SE = standard error, CI = confidence interval. The 95% CIs are presented in the third decima place because some values are very low.

* p < .05