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The current issue is the first of the eighth volume of the *Athens Journal of Sports*, published by the [Sport, Exercise, & Kinesiology Unit](#) of the ATINER under the aegis of the Panhellenic Association of Sports Economists and Managers (PASEM).

Gregory T. Papanikos, President, ATINER.



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- Acceptance of Abstract: 4 Weeks after Submission
- Submission of Paper: **28 June 2021**

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The Development of Sports Fan: From Self-Identification to “Diehard”

By Joe Harasta*

The following insight literature review describes the process that sports fans undergo in the development of their fandom – from the individual, self-identification phase to the mass-audience, communal experience and ultimately to the “diehard fan” distinction. Sports fans begin their fandom as individual entities who find emotional satisfaction in cheering for a particular team or athlete because those teams and athletes provide an important psychological component or addition to their lives. As fans’ connections to teams and athletes grow stronger, they seek out other like-minded individuals to share their emotions and feelings, which helps reinforce these attachments. Thus, the communal experience in sports is born. The communal sports fan experience can also set groups against each other for the same reasons – the “us against them” mentality. The spread of new and social media platforms provides even stronger and instantaneous relationship building and maintenance opportunities among sports fans – enabling a “virtual” communal experience. The end result of fervent sports fans’ development is to become the most committed fan – the “diehard fan”.

Keywords: fans, sports, group identity, self-identity, group values, diehard fan, communal experience

Introduction

The development of sports fans from individuals watching a game or event to the shared communal experience of thousands or even millions of people feeling the same emotions begins with a single person’s desire to experience more in life. Developing one’s self identity as a fan of a specific team or athlete begins with a craving to experience the same highs and lows as that team or athlete, feel a sense of achievement, and fulfill the desire for a communal experience of shared emotions. The ultimate goal of highly developed and fervent fans is the distinction of becoming “diehard” fans who are respected for their knowledge, loyalty, and longevity. For many, this psychological experience becomes so intense that they seek out others to share their extreme passions, which further reinforces their intense bonds with teams, athletes, and even each other. The following insight literature review outlines the evolution of the sports fan from the solitary individual who develops his or her self-identity as a fan of a team or athlete to the collective connection experienced by masses of fans who want to feel the share emotions felt by one another, and finally to becoming a member of the “diehard fan” family of fans. Essentially, why do certain individuals evolve from people

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who simply develop an interest in a team to those who devote much of their time, income, passion, and even identity to a sports team? What makes someone a “diehard” fan?

Of course, not all fans seek to become “diehard fans”. Others, sometimes referred to as lesser or “fair-weather” fans, will seek connections with fellow fans, but not to the level of “diehard” fans. These lesser fans might be adamant about their fandom during important times, such as when their teams are in championship games; however, “diehard” fans will maintain their high levels of fandom even when their teams are not at the height of success. Simply put, a “diehard” fan can be defined as someone who supports their team regardless of how it performs (Branscombe et al. 1993).

Many researchers agree that the primary psychological influence on being a sports fan is the sense of belonging and the inclusion or membership into a group. University of Wisconsin sociology professors Snow and Oliver (1995) found that the effect of being a fan is a sense of belonging and camaraderie with those like themselves. It helps to define “us” and “them”. Sociologist Zillman (1989) adds, “It appears that sports fandom can unite and provide feelings of belongingness that are beneficial to individuals and the social setting in which they live” (p. 241). In contrast, non-fans found little interest in supporting or even caring about a team’s performance even when the non-fans lived in the same area where sports fandom is rampant (Van Driel et al. 2019). One can then see the powerful effect that sports fandom has on individuals who elect to support a team or athlete compared to those who do not.

In addition to feelings of belonging, being a sports fan provides the opportunity to participate in activities the fan may not otherwise be able. Wann and Branscombe (1991) found that sports fanaticism allows people to be part of a sporting event who would otherwise have no connection to it. For example, those fans that are unable, or unwilling, to physically participate in sports can vicariously engage in the activities of the athletes they cheer for and support. Also, events such as autograph signings, meet-and-greet, charitable functions provide additional means for fans to connect with their favorite teams and athletes. These events also reinforce bonds with fellow fans. Moreover, fan attachment to their fellow fans can dictate long-term attendance frequency. That is, the more attached fans are to one another, the more likely they are to attend team events and games (Yoshida et al. 2015). The progression from the solitary fan, to group mentality, to “diehard fan” distinction begins with one fan’s choice to establish his or her self-identity as a fully committed fan of a team or player. The progression of sports fans from individuals supporting a team or player to the communal experience of thousands or even millions sharing the fan experience is multifaceted. This insight literature review investigates these facets, including the psychological processes, sociological implications, and ultimately to the outward displays of communicative expressions fans use to show their levels of fandom. The communication aspects of this article must therefore be prefaced with the motivations and intentions of fans’ communication actions. These communication actions have their motivations in psychological and sociological origins. Katz et al. (2018) add, “...understanding sport fan behaviour necessitates including both psychological and structural

elements of behaviour” (p. 176). Therefore, it would be impossible to focus purely on the communication aspects of sports fandom without also considering the reasonings and origins of sports fans’ communication. The goal of this review is twofold: To add to and encourage greater scholarly understanding of sports fandom so that it might “...advance knowledge of sport consumer behavior in the future” (Lock and Heere 2017, p. 430). Secondly, in addition to increasing the academic understanding of sports fandom and fan development, this review might also benefit teams’ management, marketers, and even athletes because it helps understand and explain the fan development process. With this understanding, these entities can then develop and manage actions that can better achieve their public and fan relations objectives and initiatives.

The paper outlines the formation process of sports fans by introducing the purpose of this study; the methods used to acquire resources for analysis; the impact of social identity and role models in sports; Basking In Reflected Glory (BIRG) and Cut off Reflected Failure (CORF) tendencies; social media’s impact; nationalism; and the progression from the self to the group-identity of fandom. Highlights from the paper include:

- Insight Literature Review of 126 studies.
- Sports fans connect to certain teams, players, and the geographic areas in which they compete. These teams, players, and areas become part of sports fans’ self-identities.
- The communal nature of sports explains why fans congregate together in sports bars or other venues to be with fellow fans.
- Sports fans seek ways to publicly express their feelings toward certain teams, cities, and players through clothing and merchandise, as well as the use of symbols and terminology specific to a team or city.
- The spread of social media enables sports fans to directly communicate with fellow fans, thus enhancing fans’ experiences and levels of interaction, which also serves to reinforce self-identification.
- Fans of particular teams or players often make personal and strongly emotional connections to them; the outcome of a game or a player’s behavior has a direct impact on their psyche.
- Sports fandom can be thought of as an evolution of changing personality traits and actions beginning with less-involved fans to communal fans and finally to “diehard” fans.
- Not all sports fans move to the level of “diehard” fans; that evolution depends on variables relating to their levels of involvement and personalities.

Methods

Search Strategy

The literature search for this article began in December 2017 and continued until February 2021. Because of the nature of an insight literature review, only publications pertaining to the development of sports fans in the early self-identification phase, to those on the communal sports experiences, and finally to the highly established fan were included. Article filtration was based on the reasons and effects of sports fans' evolutionary process in becoming a "diehard" fan. As the search continued, additional key elements of sports fandom were further investigated as they arose from the literature. For instance, analyses of social identity theory led to exploring self-categorization theory's effects on fans' evolutionary processes. Sources for this article were obtained through four databases: JSTOR, ProQuest, Communication Source, and Academic Search Ultimate. Only peer-reviewed articles and books were used. Publications not directly relating to sports fandom were excluded because they did not offer insights specific to the sports genre. Articles on popular music fans, for example, would not offer information pertinent to this literature review. Dates of publication ranged from 1968 to 2020. Studies prior to 1968 were not included so that this insight literature review can concentrate on modern sports fandom with its relationship with new and social media, changing trends, social movements, etc. Titles were gleaned to identify their relevance to this review. From these titles, the abstracts were analyzed to further refine the search of journal articles to be used. This review does not focus purely on gender, ethnicity, or race as influencers on sports fandom. Instead, it should be interpreted as a starting point for future scholars interested in the phenomenon of sports fan development in general. Because it is an insight literature review, it should be viewed as a resource, one among many, that scholars might tap into, not as an all-encompassing summary of all possible influences and effects on sports fandom. The aim of this study is to provide insights into the overall evolutionary development of sports fans today, and to act as a tool for primary scholarly studies. Funk and James' (2001) analysis of fan development and their Psychological Continuum Model (PCM) do provide insights into individual fan development. This review, on the other hand, looks at both the individual, as well as communal sports fandom phenomenon, and its development from the individual to the group perspective from different scholarly perspectives and sources spanning several decades. Also, this review analyzes the influences and effects of mediated communication technology and societal changes and shifts affecting sports fandom, which were either nonexistent or less pronounced in years past. It organizes what is currently known about sports fandom development in the modern world, critically analyzes this knowledge, and discuss the implications of this knowledge.

Selection Criteria

Because of the breadth and vastly differing areas of scholarship regarding sports fan study, initial searches included simply “sports fan”. Searches were then narrowed to include “sports fan” and “identification”; “sports fan” and “development”; “sports fan” and “motivation”; “sports fan” and “relationships”; and “sports fan” and “communal”; “sport socialization”; “fan socialization”; “fan community”; athlete brand”. The full search process and results are available in Appendix A.

Included and Excluded Studies

Initial searches of the four databases resulted in 431,357 total articles with 209,250 peer-reviewed articles. Due to this volume, articles that duplicated previous studies were excluded if they did not offer additional, new insights into the study of sports fandom. The article review process lasted 38 months for this insight literature review. Because of the unique nature of insight literature reviews, the author identified articles from the searches that were most germane to this review by recognizing those that focused on fan identification and development; fan relationships; fan identification; and fan motivations; as well as communal fan experiences. This search led to the selection of the 126 included pieces of scholarship in this insight literature review. The decision to include articles were based on the following objectives: (a) to identify relevant perspectives relating to the impact of sports fandom on the individual, (b) to describe the studies’ impact and importance to the study of fan development, (c) to consider the studies’ results impacting various perspectives relating to the study of sports fandom, and (d) recognize the processes and effects of communal sports experiences. Additionally, it is important to understand that this review focuses its attention on selecting articles, and sections of those articles, based on their insights and explanations that could be gleaned to understand the developments of sports fandom today, even though an article in question might be decades old. Because this is not a largescale state-of-the-literature review, but rather a focused insight literature review, the author selected articles that best related to the specific focus of how one evolves and acts as an individual progressing through levels of fandom, which again, is at the heart of this review. Appendix B further illustrates the inclusion and exclusion criteria for the sources used.

Social Identity Theory, Identity Theory, and Sports Fans

Social psychologist Tajfel (1970) identified social identity theory as the reason why people behave and think as they do. Unlike identity theory, which explains role and role behaviors, social identity theory seeks to explain the behaviors associated with group processes and relations within the group – the communal experience. Both theories share similarities. However, social identity theory is rooted in psychology whereas identity theory stems from a sociological

perspective. Both theories are important in understanding fan development. Where social identity theory can explain people's roles in groups, identity theory explains the actions they take in those roles (Hogg et al. 1995). For sports fans, identity theory describes individual's role behaviors, while social identity theory can explain levels of fandom within fan groups, as well as those groups' behaviors. In other words, are they non-fans, casual fans, or "diehard" fans, and what does that mean in terms of how they act? The answers to these questions can explain how levels of fans differentiate themselves from each other, as well as why some fans behave as they do while other might behave differently. When combined, these two theories provide greater explanations into the phenomenon of sports fans' roles and actions (Lock and Heere 2017).

Tajfel and Turner (1986) introduced the notion of social identity theory as one in which people possess two identities – their personal identity and their social identity. Social identity theory involves three steps: (1) categorization, (2) identification, and (3) comparison. Built upon Leon Festingers' identity theories, Tajfel asserts that during categorization, people attach themselves to other individuals and groups that are either similar to them or more successful. This helps explain the initial, individual desire to root for a particular team or athlete. Specifically, it is the desire for improved self-image and self-identification that fans attach themselves and their personalities to successful teams and athletes (Wang et al. 2020). After all, why cheer for an unsuccessful team or a poor athlete? However, there are other reasons. Initially, gratification plays a major role in the development of sports fandom. The earliest stage of sports fandom begins with the search for self-gratification through categorization. But the gratification can arise from an individual's desire to "fit in" as well the desire to vicariously attach oneself to a successful sports franchise. To this end, fan development often begins at an early age when children seek attention and more importantly, approval from other – most notably, their parents who might already be fans of a specific team. Multiple In-Group Identity Framework (MIIF) consisting of: (a) subordinate (identification with a team), (b) subgroup (geographical location), and (c) relational group (family, friends, etc.) also helps explain fan development (Lock and Funk 2016). These three areas also help to ascribe levels of fandom, i.e., non or lesser-fans, as well as "diehard", in fan groups based on the degree to which the three frameworks play a role in self-identifying oneself as a sports fan.

In addition to a desire to self-categorize as successful, it can be such parental influences that affect young fans' likelihood of cheering for one team over another (Spaaij and Anderson 2010). In many ways, fanhood can be passed down through family generations, or relational groups (James 2001). The notion is, your grandfather cheered for the Green Bay Packers, so did your father, and so now must you; and someday, your children will as well. This mentality can be so ingrained in young fans that it is difficult to break the chain of family-influenced sports fandom (Kolbe and James 2000). Self-identified fandom is also long-lasting. As sports fans age, they adapt to physical and mental changes to maintain a continuity in their relationships with their favorite teams (Smith 2019). In addition to parental influences, other motivations exist that can help explain the

relationship between sports and fans. Participation in sports also plays a role in fan development, as well as the type of sport.

While Americans closely align themselves to team sports, other nations focus more on individual sports, which can help explain nations' differing fandoms. Melnick and Wann (2004) found that Norwegians see sport as a mostly participatory action more than one where people simply root for others participating in sport. Whereas Americans strongly identify themselves as sports team-focused fans, cultural and social differences in other countries can account for less focus on team fandom found in other nations. Also, access and media focus play a role. In America, fans can choose from over 100 major sports teams. That coupled, with intense marketing and media attention, explains why team fandom is so rampant in the United States (Melnick and Wann 2011). However, other nations' fans share similarities to American fans despite decreased focus on team sports commercialization.

Melnick and Wann's (2011) study of Australian university students found that friends most influenced sports fandom followed by parents, school, and then community. An American study of the same kind duplicated these findings (Wann et al. 2001). A similar study of Greek students found the influence order ranked as friends, parents, community, and school (Theodorakis and Wann 2008). Parry et al (2014) found that young United Kingdom sports fans were most influenced by fathers watching games with sons, and that UK fandom most closely matched fan behavior of American fans rather than other European fans. The socializing agents of friends, family, and community, therefore, can greatly impact sports fandom, especially for young fans. Children seek to establish fan membership among other fans, mostly their friends who are fans, before establishing attachments to specific teams and players (Reifurth et al. 2018). Therefore, young fans seem to place greater importance on "fitting in" with their peers than connecting with a team, which helps illustrate the importance of social identity theory on children's fan development.

Categorization

Sociologist Jenkins (2008) later found that social identification theory, "...refers to the way in which individuals and collectives are distinguished in their social relations with other individuals or collectives" (p. 18). Vanderbilt University professor Thoits and Virshup (1997) adds that social identity theory also explains how others accept individuals. That is, the things fans do to gain acceptance and admiration from fellow fans, such as painting their face in the team's colors to outwardly illustrate their loyalty to their fellow fans, act as visible displays of social identification. Young Green Bay Packers fan might not understand why they are wearing foam wedges of cheese on their heads, but they understand the importance that others place on it because they see it in people they admire or respect, like parents. This illustrates the power and significance of these outward signs of fandom. Texas Tech University marketing professor Levarie (2000) adds that social identity is vital to the study of fan psychology because of its societal pervasiveness. Levarie (2000) writes:

Social identity is applicable because fan behavior is socially visible, involves relationships with others, can lead to the formation of a fan role and one can experience satisfaction with that role. Those people with high identity salience are more likely to participate in identity related activities...those with high identity salience for being a fan of a sporting team will attend games more often than those low in identity salience (p. 230).

Identity salience helps explain the importance that sports fans place on social depictions of themselves as fans of a specific team. Beginning with self-identifying as a fan of a team, fans then move on to showing others around them that they are in fact a fan by wearing clothing or attending events specific to a particular team. These actions act support their growing fandom.

Identification

Burke (1991) defines the second step of social identity theory, identification, as, "...a set of meanings applied to the self in a social situation defining what it means to be who one is" (p. 836). Sociologists Borgatta (1992) add that the person we choose to be is determined by how much satisfaction we derive from, and how committed we are, to be that person. For sports fans, the level of satisfaction derived from being a fan determines how committed they are to their roles as fans, and consequently their commitment to their favorite team, which is explained by identity theory. The adamant Green Bay Packers fan, for example, might devote hours each week pouring over team news, eagerly seeking to find the latest information on the team twelve months out of the year, whereas a less evolved fan might simply watch each game without much thought of it afterwards. Madrigal (1995) says that this type of identification, as well as the unique experiences associated with watching sporting events, contribute to satisfaction. Levarie (2000) adds, "Attachment to a team could be an important part of one's self. The more attachment a person feels to a team, the more important that identity becomes to their sense of self" (p. 229). Ardent Green Bay Packers fans are not just fans representing that team, that team's identity becomes a part of those fans' identity as well. University of New Orleans professor Dimanche (1994) findings suggest that fans use a sports team for self-concept maintenance, which could account for why some fans become "diehards", while others remain relatively unaffected because of their lesser attachment to a team. That is, ordinary fans become "diehard" fans because they depend so wholly on the role as team booster for self-identity purposes, and therefore relish deeply in possessing "diehard" status. Burke (1991) agrees saying, "The core of an identity is the categorization of the self as an occupant of a role" (p. 840). In the case of sports fans, it is the category or level of fandom – "fair-weather" or "diehard" – that can lie at the core of their identities. Individuals develop their self-appointed degree of fandom; whether to remain a casual fan or one whose identity is inextricably linked to a team or athlete, during the identification phase.

Comparison

The third step in social identity theory, comparison, deals with individuals' desire to gain acceptance and favor by those they attached themselves. For sports fans, that includes fellow fans. Social psychologist Hogg et al. (1995) says identity is formed as a result from membership within a desired group. Tajfel (1970) adds that individuals strive to maintain these social identities by favorably comparing themselves to group members and non-group members. This may explain why Green Bay Packers fans refer to themselves as "Cheeseheads", or that Cleveland Browns fans call their stadium the "Dog Pound". This allows them to distinguish themselves from other football fans and reinforce their common identity. Researchers McCall and Simmons (1996) found that human interactions, like those experienced by football fans in Green Bay or Cleveland, are inextricably linked to the fans' definition of themselves and their world. Tajfel adds that these interactions provide, "...a system of orientation which helps to create and define the individual's place in society" (p. 96).

Sports fans develop and maintain their identities by reinforcing their commonalities and by distancing themselves from rival fans by acts such as wearing team merchandise, i.e., foam cheese hats in Green Bay. They separate themselves from other fans as well through their activities, i.e., hanging effigies of star players of rival teams as Philadelphia Flyers opponents' fans did in the 1970s. Sociologist Callero (1985) says that as fans become more satisfied with their identity, they are more likely to take part in these types of activities that reinforce this identity, which might include viewing and attending more games, buying more team merchandise, etc.

Researchers agree that this identity can be so powerful that it also affects fans' ability to accurately judge the actions of their fellow fans, even when that behavior includes illegal activity. This might account for why riotous behavior is so common in teams' cities following a championship win. In a study on fan behavior at Murray State University, psychologists Wann and Dolan (1994a) used pen and paper surveys to measure the correlation between fan identity and fan perception of the university's basketball team. They found that highly identified fans reported more favorably about fans of their team than rival fan groups, even though both fan groups performed identical behavior. In other words, ardent sports fans might see destroying private property as not as serious an act if it is done by someone who shares in their favorite team's level of fandom. Psychologist Brewer (1979) identified this phenomenon in her studies finding that in-group favoritism is more prevalent and influential than out-group derogation. The commonalities that fellow sports fans share seem to essentially blind them to both their actions, as well as to the actions of their fellow fans. Here, one can see the power of self-identity in shaping the actions and perceptions of sports fans and its impact on their psyche. Moreover, Wann and Dolan (1994a) found that sports fans with a higher identification with a team were more likely to overestimate the performance of that team during past seasons as well as overestimate the team's ability in future seasons. Essentially, as people more fully identify with a team, the more skewed their perceptions of the team become. Wann (1994) later found this phenomenon

true for teams with both winning and losing records. Essentially, sports fan can wear “rose-colored glasses” when viewing the performance of their team, as well as the actions of their fellow fans. This helps illustrate the power of fandom on fans’ mental processes and their ability to rationalize and think realistically about what is true and what is not.

Psychologist and researcher Stryker (1968) found that identity theory also describes why people behave in certain ways – as peculiar as it might be; in this case, sports fans’ unique behaviors compared to non-sports fans; such wearing clothing that would be regarded as absurd outside the context of sports fandom. Researcher Petkus (1996) defined this level of identity theory in two parts: the role (in this case the sports fan) and the identity associated with that role (in this case as team supporter). Rational human beings would not wear foam pieces of cheese on their heads in normal, day-to-day life. But, in the role and environment of the team booster, it is not only completely acceptable, but encouraged. Sociologist and University of California professor Burke (1991) explained that this type of behavior occurs because people want to act in a way that causes others to think highly of them. Burke agrees, asserting that someone the individual seeks admiration from will affect how fans behave. That is, fans’ identity and subsequent actions will reflect the attitudes of those around them, namely other fans from whom they seek admiration. Fully identified fans might spend thousands of dollars customizing their vehicles in team colors to stand out and separate themselves from whom they see as lesser fans. Also, highly identified fans are also prone to arrange their lives around sports events, prioritize their thoughts and conversations around sports, and invest great time and money on sports (Kenyon and McPherson 1974).

One can perceive this behavior as a result of a type of peer pressure that exists among sports fans, which ultimately influences their behaviors derived from social identity theory. Technology and changes in social issues also play a role in affecting how and why sports fans interact with one another, and how they go about reinforcing their self-identities. Sports fans’ “peer pressures” tend to vary based on the sport, level of fandom, and the available technology at the time. Social Identity Theory would then explain why social media usage among fans is so prevalent. It is because of its ability to immediately reinforce intergroup relationships, and it easily enables users to communicate within the fan group more quickly and more directly than ever before. The pervasiveness of social media communication sees its roots based in the communication styles and practices of years past. Uses-and-gratifications theory suggests that sports fans use media, selection of particular outlets, and the content of those selections to meet their needs both socially and psychologically (Rubin 2009). That is, it provides an outlet where fans can virtually meet and discuss major and minor events and news concerning their teams and players, as well as participate in rumor and gossip about them. The psychological ramifications of these virtual conversations arise from users’ mental reinforcements of their bonds with fellow fans, teams, and athletes. Ruibley and Pate’s (2017) study of sports and brands found that sports fandom centers on the team and athlete they cheer for; their identity with a team or place; and the inspiration they feel from watching and communicating about their

favorite teams and players. With today's communication technology, the inspiration derived from cheering and identifying with teams and players allows for immediate social and psychological gratification. Green Bay Packers fans in 1950 were no less adamant in their allegiance to the team than fans in 2020. However, today's fans have the technological means to communicate instantly with millions of other like-minded fans. While technology and public opinion changed over the decades, the motivations of sports fans continue and adapt as new communication opportunities and tools emerge. The self-identity development of sports fans remains unchanged. However, ever-changing technological opportunities can influence today's sports fans, their behaviors, and their means to establish and grow their identity as fans more quickly than in years past. Combined with communication technology, self-identity remains one of the backbones of sports fan development because outside influences still play a major role in affecting fans' self-identities.

For instance, today's celebrity-obsessed culture impacts people's perceptions and shapes their opinions greatly. Consider, for example, the importance that millions of people place on a celebrity or politician's Tweet and how much it influences their opinions and actions. Accordingly, sports fans establish deep trust and beliefs in the athletes they root for, and consequently, athletes become celebrities and influencers who affect sports fans in profound ways. This influence affects sports fans' self-identities because fans, in a sense, take on the identity of the athlete for whom they cheer. This helps explain why breakfast cereals place celebrities on their boxes – a photo of Michel Jordan on a box of Wheaties lets everyone “Be Like Mike”, even if it is only at breakfast. The same can be said for the athletes who fans respect most and vice-versa. In Green Bay, a blue-collar, working-class city, fans of its football team value work ethic and commitment. Players who show themselves with this type of reputation consequently become folk heroes in that city. However, athletes can take on great importance to fans for reasons other than their on-field performances, such as their roles in shaping public opinion on societal issues and their overall “marketability” in a commercial sense.

The Athlete as Influencer

Today's star athletes can be brands in and of themselves. They hold considerable influence over fan consumers. Celebrity athletes affect fans' perceptions and actions based on athletes' on-field performance, physical appearance, and off-the-field marketability stemming from their celebrity (Arai, et al. 2013). Vorderer (2000) suggests that Entertainment Theory can help explain the aspirational nature of celebrity and why it is so impactful in influencing people's thoughts and behaviors – essentially, why people want to mimic or reflect the lifestyles of celebrities. This accounts for the reason why celebrity endorsements are so effective in marketing campaigns. In addition to the level of celebrity, researchers find that a celebrity's industry or profession plays an integral role in the effectiveness of their endorsements (Erdogan 1999). For sports fans, it is the sport, be it football, basketball, etc., that impacts fans' relationships with

their favorite athletes. Hockey fans, for instance, connect with physically imposing athletes while gymnastics fans might be more attracted to graceful athletes. Additionally, the seasonal nature of sports means that fans' connections to their athlete celebrities can possibly wax and wane. That is, a fan of a baseball player has much more invested in their favorite athlete from April to September. This excitement might be less intense during the off-season, only to reemerge in the spring, just as with a child's excitement grows as Christmas gets nearer and nearer. In a sense, athletes take on a seasonal magnetism – not too different than Santa Claus. However, it is peoples' level of identification with celebrities that plays the greatest role on the how much impact celebrities possess (Basil 2012). Accordingly, the role of professional athletes is critical to self-identified fans' behaviors because of the impact that sports figures have on fans' lives. Highly identified fans will happily pay hundreds or thousands of dollars to mimic their favorite athlete – the popularity, and cost of some sports celebrities' jerseys illustrates this point. Also, membership in the fan community affects fans' consumer tendencies. Greater associations and stronger roles in those communities can equate to increased sports product consumption and team event attendance (Hedlund 2014). This enables fans to demonstrate their commitments, even if superficially, to one another in the fan group. Consumer culture and material culture also play a role in the outward expressions of sport solidarity with a team or player. Crawford (2004) found:

Sport-related consumer items can signify membership to a local or more distant community, dedication to a club, sport, or team, [and] 'authenticity' as a 'real' fan... the meanings 'read' from these can also frequently differ from those that were intended by the wearer, for as argued, clothing and similar consumer items operate as poor forms of communication (pp. 57–58).

Giulianotti and Robertson (2004) furthered the notion of fans' consumeristic tendencies, or personalities, by categorizing them into four fan types in his study of British football clubs. These include Supporter, Fan, Follower, and Flaneur. The most ardent, or hot categories, are those of the Supporter and Fan who maintain strong loyalties with teams whereas Followers and Flaneurs' solidarities with teams is weaker or superficial and more motivated by the need to play the part of a fan rather than being a loyal supporter. The thin forms of solidarity with teams and athletes often play to the consumeristic nature of modern displays of sports team allegiance, or the lack thereof. In essence, "diehard" fans best exemplify the thick and hot categorizations of Giulianotti's sports fandom taxonomies. Crawford (2004) provides a fine example:

For instance, the 'NY' logo of the New York Yankees baseball team is one of the most common symbols to appear on baseball caps in the UK, but it is unlikely that many of the wearers of these will likely have an allegiance with the Yankees, and many might not even associate with the team (p. 57).

Thus, these types of fashion-focused, rather than fan-focused, displays of sports team "allegiance" evident today center on superficial appearances instead of

commitment. This phenomenon also plays into today's celebrity-obsessed culture. To that end, Roy and Mishra (2018) found that the status of celebrities impacts their influence on fans. The more important, and famous/accomplished an athlete, the more influential they are. Fans judge the aspirational status of athletes according to their expertise and sportsmanship, the symbol of who and what they represent, and their life story or role model appropriateness (Arai et al. 2014). Therefore, the fervent nature of sports fandom plays perfectly into the role of the celebrity endorser. The mentality is essentially, if I eat the same breakfast cereal as the athletes I root for, then my connection to those athletes and their achievements becomes greater and more tangible to me. If Michael Jordan eats them –and I like (and want to be like) Michael Jordan– then I must eat them too. “Fans primarily showed loyalty beyond reason to teams but also relayed their commitment and emotion to athletes, identifying with those brands, and being inspired by those brands” (Ruibley and Pate 2017). The influence of the celebrity endorser on sports fans is clear to the extent that today's athletes are also expected to have moral obligations to act a certain way because of the influence they have on fans (Archer and Matheson 2019). In a sense, sports fans develop deep relationships with athletes that often mimic real-life social interactions. Attention to today's social activist athletes illustrates this point. Celebrity athletes who use their notoriety to spread social movements, such as the Black Lives Matter movement in America, take on a role much greater than simply the athlete playing a game in the field. Responsible citizenship, meritocracy, and interdependence in the effort to increase social consciousness play critical roles in how fans interpret and react to athlete activists (Kaufman and Wolff 2010). Star athletes involved in social activism might also be deliberate in their actions regarding their activism, thus playing a part in the development and maintenance of the star's celebrity brand (Coombs and Cassilo 2017). Unsurprisingly, fans with especially high levels of fandom will interpret and react to these parasocial relationships much more often and with more intensity than less-identified fans (Earnheardt and Haridakis 2009).

The effect of star athletes' behavior on fans' identities; their level of fandom; longevity of fandom; and propensity to gather with other fans; is often profound. Modern athletes affect not only what happens in the sports world, but beyond as well. Football players kneeling during the national anthem, for example, illustrates players' power to influence beyond the sport. It makes sense, therefore, that if one's self-identity is so intertwined to an outside influence such as a team or athlete, then it is only natural for fans to want to associate and connect to teams and players who demonstrate qualities admiral to those fans. However, that is not to say that fans' attraction to athletes cannot be changed.

Athlete scandal is nothing new, but today's speed of communication and the types of imagery available via social media often makes them more impactful on fans than in years past. Video and images of star athletes engaged in domestic violence, drug use, and racists acts shows fans a side of their favorite athletes that might have been either impossible to see before or more easily suppressed by teams and attorneys in the past. Cellphone technology where people record for themselves these types of actions, or security camera footage, leave many fans with little means to defend their favorite athletes and their attachments to them.

From a commercial standpoint, fans favorably judge brands that cut ties with athletes involved in scandals and negativity (Sato et al. 2020). This shows the impact of athlete actions on fans' perceptions and the appropriateness of maintaining their fan relationship with them. In addition, whether or not an athlete purposefully engaged in the negative behavior also affects fans' attitudes toward them. An athlete who actively and intentionally behaves badly will have a more difficult time mending their relationships with fans than athletes whose actions are perceived to be unintentional. More involved fans, or "diehard" fans, however, are less likely to see accidental misbehavior as a major reason to cut ties with athletes than less-involved fans (Sato et al. 2015). Lee et al. (2016) found "...highly identified fans seem to regulate negative emotions but deliberately select moral disengagement reasoning strategies to maintain their positive stance toward the wrongdoer... (p. 176). Essentially "diehard" fans judge negative athlete actions less harshly than lesser fans whose attachment and engagement with them is less significant and important than it is for more impassioned fans. Moral rationalization is easier for "diehard" fans than with less-engaged fans when it comes to interpreting athletes' negative behaviors. Moral decoupling on the other hand, enables even lesser fans to judge athletes' indiscretions with less criticism because it enables them to admire positive on-field performance in the face of negative off-field actions (Lee et al. 2015). That is not to say that admiration equates to forgiveness. Image repair strategies that actively address past transgressions enable fans to forgive athletes more easily (Lee and Kwak 2017). While performance-centeredness allows some athletes to maintain their positive public image while others cannot, (i.e., the better the athlete in terms of skill, the more likely they are to restore their image) it is a combination of off-field reparations with on-field performance that enables fans to positively judge athletes involved in scandal. Traditionally, it is performance, however, that has and continues to most influence fans' connected identities to their favorite teams and players.

BIRGing and CORFing

Cialdini et al.'s BIRGing and CORFing Theory (1976) explains why winning teams attract more fans than losing teams. According to this theory, teams like the New England Patriots would appeal to people more than the Washington Football Team, simply based on the teams' unprecedented performance over the past decade. Cialdini et al.'s BIRG (Basking in Reflected Glory) refers to fans' tendency to "...share the glory of a successful other with whom they are in some way associated" (p. 366). For instance, BIRGing explains fans' inclination to wear team merchandise after a win to publicize their connection to the team, allowing them to vicariously share in the team's success. Based on the BIRG tendency, Green Bay Packers fans, for example, are more likely to wear team merchandise on Monday morning following a Sunday win than after a loss. University of Oregon professor Madrigal (1995) confirms this, stating, "The behavior manifestation of an increased association may take the form of wearing clothing that features the team's logo or extolling the virtues of the team to others" (p. 206).

Cialdini agrees, saying BIRGing occurs when fans publicize their connection for the team through clothes, painting face, etc., even though the fans have not really contributed to the team's success. Snyder (1986) adds that human nature makes people want to associate with success and those who are successful. In contrast, the tendency for fans to CORF (Cut off Reflected Failure) explains why some sports fans disassociate themselves from losing teams. In other words, the Green Bay Packers jersey might be more easily left in the closet on a Monday after a bad team loss. Hirt (1992) adds that CORFing is an image protection tactic that allows fans to distance themselves from a losing team and its lack of success. But does that theory apply to highly evolved, strongly self-identified fans too?

Wann and Branscombe (1991) did not agree with this generalized application of the CORFing tendency for all fans. For them, "diehard" fans believe that being a fan is such an important part of who they are, that they will persevere even when their team loses – in essence, being a fan of a losing team is a badge of honor for the "diehard fan". For lesser fans, CORFing might be a defense mechanism used to protect themselves from their teams' failures. Some might categorize such fans as "fair-weather fans". Additional research confirms this tendency. Madrigal (1995) found that fans with a high identification with their team are more likely to BIRG while those with less identification are more likely to CORF. In essence, the level of fandom plays an integral role in the continued maintenance of fans' self-identity. The more vested fans are in their team, the more likely they are to remain connected to it during losing seasons or following especially bad losses. At this point in the development of the sports fan, the growth of the fan is predicated not only on the performance of the team or athlete, but also on the intensity or level of fandom. The distinction between the "diehard" and "fair-weather" fan becomes clearer at this point.

Cialdini studied fans of amateur sports to develop his BIRG and CORF models; University of Missouri-Rolla psychology professor End (1991) applied the BIRGing and CORFing theories to professional sports. End studied National Football League fans who used the internet to reinforce their identity with their team when it won; in other words, they BIRGed. End found that fans, especially in the post-season, will use the internet to BIRG or gloat, which boosts their own feelings of joy and adequacy while allowing them to denigrate fans of unsuccessful teams. The ardent Green Bay Packers fan will take to social media and commentary sections to openly express their love of their team. Fans now publicly illustrate their commitment and connection to their favorite team and athlete. At this point, fans' self-identities are so powerfully associated with the teams and players they support, the next logical step is to find other like-minded individuals to share and show-off their newfound identity with. Moreover, the fan community, which arises from individuals' development of sports-fan self-identities, hold sociological implications that can be found in any group. Everyone is not created equal in fan communities, nor are their roles within it. Like any group, there are leaders and followers. Katz and Heere (2013) found in their study of college football game tailgating events that "A newly formed community is not a homogenous or random network of individuals but rather a network where a select few persons have many more connections, and thus a heightened importance..." (p. 283). A

later study found that these select individuals in the fan group are so important that sports team management must find ways to engage lesser fans due to the untapped revenues available from these large groups of non-“diehard” fans (Katz and Heere 2015). Accordingly, fan groups are hierarchical with certain fans taking on more important and more respected roles within the fan community. These communities and their social structures arise from self-identities, as well as the identities others within the group place on certain individuals.

One can see the progression of the novice fan deliberating on the team, player, or sport to follow in the early stages of fandom; how much importance to place on them as their fandom grows; and ultimately how to reinforce their identities by teaming up with others like them. This enables fans to not only reinforce their connections to teams and players, but also establish themselves as the bigger or the biggest fan among their peers. Additionally, it creates bonds that enable fans to develop camaraderie and a shared group mentality or groupthink that allows them to reinforce their commitments to the team, as well as fend-off fans of rival teams. This phenomenon can be seen in cities that include out-of-town sports bars. For example, Kansas City Chiefs fans can congregate and commune together even in New York City’s Brooklyn Borough. Major cities often include these types of establishments where fans of out-of-town teams can meet, eat, and drink while their favorite teams, whose home stadiums might be thousands of miles away, play of multiple television screens.

The Communal Experience

The 1939 Olympics was the first live televised sporting event, and since that time, television has become sports fans’ number-one means of following teams and athletes, and in turn, provides them a communal interface in which to interact with fellow fans. Fans gather around televisions to watch, root for, and sometimes commiserate with each other. Studies suggest that the need for televised sports centers on fans’ self-identified personalities and their need for stimulation (Little and Zuckerman 1986). Watching televised sporting events can take on the same role as watching a major motion picture with its drama, characters, and even its violence. Zillman (1989) found that televised sports viewers levels of arousal depend on what is happening in the game and how it is being presented. For some, televised games’ levels of violence enable fans to vicariously live out aggressions they would otherwise be unable to do (Wann et al. 1999). Sometimes, the competition even moves from the field to the living room. The shared experience of watching sporting contests with fellow fans enables them to understand and contextualize the events on the field through the lenses of their individual everyday understanding of how things work. These individual understandings are then combined through the shared experience, thus enabling the development of a new, group experience (Holt 1995). In his two-year observational study of baseball fans in Chicago’s Wrigley Field bleachers, Holt (1995) found:

Spectators use interpretative frameworks to experience professional baseball in three different ways: through accounting, spectators make sense of baseball; through

evaluating, spectators construct value judgements regarding baseball; and through appreciating, spectators respond emotionally to baseball (p. 3).

The shared experiences of sports spectatorship include many facets of community, and in a way, microcosms of society in general where there are established roles, rules, and expectations of group members. In addition, the role and level of fandom within the community influences even the experience of watching sports together.

Fans with higher levels of identification with a team actually experience the game and interpret and remember it differently than lesser fans, even though both segments of the fan community are watching the same game. More highly identified fans, or “diehard” fans tend to recall boring and exciting game wins with equal fervor, while lesser fans felt the same about boring game wins and exciting losses (Jang et al. 2018). The distinction between the two fan groups illustrates the deeply ingrained experience of sports as interpreted by fans with differing roles and expectations within the communal fan experience.

Based on these roles, the communal experience of viewing sporting contests together can enable fans to even establish their dominance over one another as well – the idea of outdoing a “lesser” fan by knowing more about trivial facts, how long they have been a fan, etc. can be more easily demonstrated in the communal experience than by one’s self. “Diehard” Green Bay Packers fans can impress lesser fans by displaying their knowledge of obscure facts about the team while they are all gathered around to watch a game. The joys of showing off one’s level of fandom experienced by highly self-identified fans can be profound.

McDaniel et al. (2007) argue that watching sports can stimulate viewers while also maintaining that arousal for long periods of time. “...for millions of people the excitement of watching their teams compete is the greatest thrill they have except for sex” (Zuckerman 1994, p. 156). The shared emotional ups and downs are more dramatically felt with others than alone. The Green Bay Packers fan feels the emotions of fandom more easily and powerfully with other, like-minded fans. These emotional fluctuations can be as much a physical sensation as they are psychological. Some studies (Hillman et al. 2004, Bernhardt et al. 1998) suggest that physiological responses to games directly correlate with fans’ level of engagement and identification with teams and players, affecting heart rates and testosterone levels during key times of games. Others (Kreft 2012) contend it is sports’ inherent dramatism that affects fans – its aesthetics and challenges – which influences fans’ physical and emotional responses. Because these responses can be so powerful, not to mention so eagerly anticipated, highly self-identified fans look for ways to prolong the experience as much as possible. Just as today’s means to view games from thousands of miles away enables fans to never miss out on a contest, so too does it affect the communal experience of sports fandom. For instance, Voci (2006) found that soccer fans self-categorized themselves differently if they viewed games in person as opposed to those who viewed them remotely, thus illustrating the impact of actual in-person gameday experiences on fans and the effect of depersonalizing the communal fan experience.

Gantz et al. (2012) found that sports fans prepare for games and events through rituals and emotional exercises to psyche themselves up long before games. This

helps explain why fans will meet together in parking lots hours before a game to tailgate with one another. These fan-generated events extend the shared experience of sports fandom. Studies suggest that sports fans are unique in their desire to be together with one another while at these kinds of events. Wenner (1989) concluded that sports fans differed from non-sports fans because of their inherent emotional connection to the communal nature of watching sports together. Watching sports is the ultimate communal experience for highly developed fans. Fans who watch sports together develop a social interaction and community that enables greater, and quicker, relationship building than non-sports fans. Generally, sports fans participate in group activities and interact with one another more often than their non-fan counterparts (Gantz et al. 1995). Gantz et al. (2006) found, “[Fans] begin early, thinking about an upcoming game, searching for information about it on the Web and in print, talking about it with their friends, and planning their schedules so as not to miss any of the action” (p. 114). Sports fans engage in such behavior and activities to share the pleasure of watching sports (Gantz et al. 2006). Knobloch-Westerwick et al. (2009) specified these pleasures, finding that highly developed fans’ levels of suspense and engagement with each another came from their rooting for one team over another. In other words, fan levels of anxiety, excitement, and nervousness were directly related to the level of support they have for their team – “diehard” Green Bay Packers fans experience these passions much more fervently than passive Packers fans. David et al. (2008) explained that these highly developed fans’ levels of satisfaction, or entertainment value during a sporting event is of course dependent on the events of the game, but can even more so be affected by the very ritual of watching sports together.

This might help explain the high levels of passion exhibited by sports fans following momentous occasions such as winning, or even losing, a championship or other important games. Serazio (2008) argues that these celebrations can become “quasi-religious” experience where those involved become inextricably linked to one another, even for just a moment. Great numbers of people come together, such as during championship parades, or take to the streets following a game, for the communal experience, which Rowe (2003) states is similar to tribal rituals where sports become reflexive for society and the opportunity for mass communication. As one example, tens of thousands of Philadelphia Eagles fans spilled out onto the streets of that city following their Super Bowl victory in 2018, and more than 200,000 fans attended the team’s championship parade later that week. The commitment to attend such events illustrates the importance of the in-person communal experience. But, with today’s communication technologies, the group experience is no longer limited to just physical connections between fans. New and social media technology enables “virtual” communal connections where fans from all of the world can experience the highs and lows of fandom together. Additionally, fans distanced from the geographical fan community, for example a Manchester United fan living in Japan, experiences the fan relationship differently than with those living nearer to the team’s home, in this case Manchester. These remote fans also develop relationships in more unique ways than with those who experience their fandom closer to the team’s home.

Distanced fans are expected to engage with the team and their fellow fans in the same ways that fans who live closer to the team act (Behrens and Urich 2020). Essentially, a Manchester fan living in Japan should dress, behave, and manage their fandom with the team in a similar fashion as a fan living in Manchester. The expectation of the community is that fans, even those living in the other side of the world, should express their connections to their teams the same as those living near the team. Displaced fans, or those who moved from their team's geographical location, also illustrate the impact of fan level on fandom.

Collins et al. (2016) study of football fans who moved from their team's residences found that higher-level fans, or "diehard" fans, continued to show the greatest fervor for their team compared to lesser fans still residing in the team's city. A "diehard" Manchester fan who moves to New York, for example, will therefore display a greater level of fandom than a lesser fan still living in Manchester. The separation of fan levels regarding the consumption of online content about the team also plays a role in distanced-fan relationships and behaviors. In a study of Chinese basketball fans, Pu and James (2017) found that distanced fans who simply watch games online do not develop strong relationships with teams, whereas highly connected, or "diehard" fans, were most likely to spend the most amount of time searching, viewing, and participating with fan activities via online and social media.

The Impact of Social Media

Sports fans' communication via social media continues to see tremendous growth (Pegorao 2014). Social media interaction among sports fans is second nature, and fans' use these platforms for specific reasons. Kang (2017) found that sports fans focused their mobile content on information, service, and interaction. Linked with mobile technology, online and social media have changed the communication styles of sports fans. "A mobile device allows fans to become actively involved with content related to professional sports" (Kang 2017, p. 454). Online communication allows fan groups to collectively band together as well (McCarthy et al. 2014). Fans are no longer suppressed from interacting with each other by time or distance. Moreover, the spread and ease of use of online communication allows fans to strengthen their collective influence while simultaneously reinforcing their self-identities (McCarthy 2012). Sandvoss (2005) found that online, collective fan groups can be best described as extreme involvement activities for fans. The process helps fans make meaning of their relationship to the sport and to themselves. The accessibility of online communication to immediately connect to fellow, highly developed fans provides an outlet for their social needs, which was previously unavailable (Kietzmann et al. 2011). For example, Green Bay Packers fans stationed in Iraq can virtually share the game-time experience with fellow fans in Wisconsin. Today's most popular platforms like Twitter motivate sports fans to make their opinions widely known, even though the limitations of the platform also can constrain their communication at the same time (Witkemper et al. 2012).

Use of newer social media platforms like Snap Chat by newer generations of fans shows that they still seek to commune with fellow their fans, even if it is through means different than their predecessors (Haug et al. 2015). Here, one can see the evolution of the communal sports experience keeping pace with the evolution of communication technology. Platforms such as Snap Chat, which are more ephemeral in nature than Twitter or Facebook, enable sports fans to communicate their points of view with each other in the moment (Billings et al. 2017). In other words, a particular play in a football game might seem of the utmost importance at the time someone posts a comment about it, but it might also be as quickly forgotten as the game progresses. Billings et al. (2017) study found that Snap Chat, while not perfect in its design, is the current platform of choice for sports fans. That study also found that Snap Chat sports fan users feel that posting comments is as important as the actual game occurring in the moment. Interestingly, many sports fans do not use Snap Chat to engage in two-way communication with sports figures, which is more doable today than ever before. Rather, they are motivated to communicate collectively, which further illustrates the importance that highly developed sports fans place on communing and communicating with each other in large groups. They are not motivated by the social media platform's ability to engage in individual, two-way communication. Instead, sports fans are more interested in speaking to and listening to large groups of similarly minded sports fans – thus the virtual communal sports fan experience. Spinda and Puckette (2018) found that Snap Chat usage to follow sports was based on four motives: ease and convenience; behind the scenes; vicarious experience; and unique points of view. The use of social media as a group communication tool is a necessity to the modern sports fan (Ballouli and Hutchinson 2010).

The inextricable place that social media have on online communal fan experiences exists because fans place so much importance on sharing their thoughts about athlete and team achievements – in some ways, “proving” their fandom (Pieper 2013). In any situation where groups of followers so fervently connect themselves to a sports team, the natural human inclination is to celebrate one's self and denigrate those who hold opposing views. The criticism of social media as a place for bullying and negativity holds true for the sports fan as well. The communal sports fan experience can move from like-minded individuals sharing their love of a team or athlete with one another to that of a group banding together to criticize and ridicule the opposition. Online sports rivalries are born. Athletes simply want to win for personal and financial reward, but followers of those teams crave victory because it means they are emotionally and spiritually better than their rivals, even though fans might not have technically contributed to the on-the-field victory of “us over them”. Fans' self-identification with their teams and the act of communing with others like them can be so great that rivalries can turn fans of a team into truly fanatical groups pitting themselves against anyone and everyone who thinks differently than them – a unified front of us against them.

Nationalism and “Us against Them”

Just as social identity theory can help explain how individuals develop deep bonds and associations with sports teams and athletes, self-categorization theory helps to explain the “us versus them” mentality, or dichotomy found in communal sports fandom. Demographic and psychographic variables, and combinations of these elements, often dictate the behaviors and thoughts of sports fans gathered in groups (Turner et al. 1987). In addition, self-categorization theory also helps to explain how nationalism affects sports fandom since highly emotional sporting events can often pit groups against each other. This is seen most evidently during major nationalistic sporting events because of how clearly defined in and out-group membership is during these contests (McPherson 1976).

In their examination of the 2016 Olympic Games, Billings et al. (2019) found that social identity among highly self-identified fans was comprised of patriotism, smugness, and internationalism, and that these qualities are so ingrained in fans that they might not even know it. Rose et al. (2020) posited that these types of viewpoints are in fact ingrained – that it frames fans’ views about their country and its athletes, as well as themselves. A similar study of the 2018 Winter Olympics found that fandom level was the determining factor affecting fans’ degree of patriotism and support for their own country (Brown et al. 2020). Nineteen years earlier, Bairner (2001) found “...sports and nationalism are arguably two of the most emotive issues in the modern world” (p. xi). Much of this nationalistic sporting social identity rests on fans’ views of themselves and their world. These viewpoints have evolved over time as technology and media coverage has similarly evolved. Mutz and Gerke’s (2018) study of the German national Olympic team showed emotional involvement in a team can be affected by how it is framed; finding that nationalism for the German team was less in the 1970s when the media covered it with less emotional fanfare than today’s focus on national symbols and patriotic music. The influence of pervasive and often biased media coverage from traditional, as well as user-generated social media, on communal sports fan experiences influences and shapes their world views. Groups of fans can be whipped into a frenzy, and groupthink can overcome individual judgement and decision-making processes. “...the extent to which a fan feels a psychological connection to a team and the team’s performance are viewed as self-relevant” (Wann 2006, p. 332). The competitive nature of sports can spill over to the nature of fandom.

Sports fandom, by its very nature, pits people against each other, just as the teams on the field compete against one another. Wann and Dolan (1994b) found that an in-group’s perceptions about an out-group strengthen the bond of the in-group – essentially the bonds of one team’s fans can be strengthened through their collective dislike of another. Even today for Americans, animosity exists most fervently during United States Olympic contests played against the Russian team compared with other nations, even though the Cold War ended decades ago. Longstanding rivalries coupled with highly developed fans create the perfect conditions for the “us versus them” mentality.

Bernache-Assollant et al. (2007) found in their study of soccer fans that the BIRG phenomenon was strongest for the most highly developed fans. The tendency to blast or ridicule competing fans was similarly not found in lesser fans. The group-fan experience of pitting one against the other grows strongest during periods of elation, especially with rival teams – in other words, the joyous emotions of winning over a hated rival can often stronger than the sorrow of losing (Greenspan 2003). Essentially, because team performance poses a vital threat to fans, the tendency to gloat over a team's victory is stronger than the desire to criticize when it loses. This confirms Cialdini's (1976) finding that fans of winning teams will show the team logos and attire and speak of themselves with the group pronouns "we" or "us" more often after victories than when the team loses. In all, commiseration among sports fans is not as strong as celebration. Subgroups of fans of the same team may also self-identify differently according to team performance, and therefore treat members of the same in-group differently.

Self-described "diehard" fans might not get along as well with those whom they deem as lower-class or "fair weather" fans, even though they are both cheering for the same team (Wann and Branscombe 1990). Gantz et al. (1995) affirm that sports team fandom is directly linked to fans' outward displays of emotion based on team performance, and that the degree of fandom is also on team performance – "diehard" fans will always be fans of the team regardless of its performance whereas "fair-weather" fans will be fans only when the team is successful. In other words, a "diehard" fan, one who has been supportive and loyal through the good and bad times, might see lesser fans, or "fair-weather" fans, as inferior and develop animosity toward them. Essentially, "diehard" fans might think, "Where were you [fair-weather fan] when the team was in last place, when I (diehard fan) still went to games and watched and supported them?" These feelings illustrate the divide that can exist between "diehard" fans and "fair-weather" fans. These less-developed fans might also be "urged" to become fans in areas where support for a certain team is especially high and the cultural norm for citizens of a particular city. On the other hand, in areas where a team's support is relatively low, the "fair-weather" fan phenomenon is less likely to occur. In other words, if there is little wide-spread involvement in team fandom in a particular city, that team's large-scale fanbase is likely to comprised of more developed or "diehard" fans (Asada et al. 2020).

Regardless of the level of fandom, the desire to show outward expression rests heavily on the need for fans to reinforce "their" success when *their* team wins. Again, this might be seen as an irrational reaction given the fact that it is the athletes on the field, not the fans, who ultimately determine team success. Nonetheless, as with most large groups of people collected together for one, highly emotional reason, the communal sports fan experience is ripe for the highest of the highs and the lowest of the lows. Fans of opposing teams will often feel intimidated or uneasy about wearing team merchandise in an area where their team is the feuding adversary, especially if they are alone (Chang et al. 2019). The communal sports phenomena enable groups of opposing fans to unite and form a kind of pack while in the territory of their rivals. From this highly charged atmosphere comes the development of a group dynamic or communal identity

created from the collection of many comparably developed individual self-identities – the group identity.

From Self-Identity to Group-Identity

The creation of the group identity rests in the ability of its members to first develop strong individual self-identities; reinforce and build on those self-identities; share those identities with others like them; and ultimately for the group to think and behave as one. Self-identity can best be described as the way people think about themselves based on their membership in a group (Turner and Reynolds 2010). The individual in combination with the group is at the heart of all social processes (Turner et al. 1987). As noted in the Social Identity Theory and Sports Fans section, individual social identity plays an integral part on the development of sports fan groups. As individuals' social identities take on greater importance to them and their lives, it equally affects their associations with others, namely similarly self-identified fans. This explains the progression from self-identity to group-identity, or the communal fan identity. For example, the progression helps explain why fans of Manchester City are different than fans of Manchester United, despite the fact that they are fans of the same city's football clubs. Heere et al.'s (2011) study of fans of three Florida university sports teams found that fans most strongly identified with the teams than the state, and that the relationships between fans and teams are unique in this sense. These groups identify themselves very differently from each other because of the evolution of their members' self-identities. That is, even though both groups of fans are very close to one other geographically, they may be very far apart in terms of how they think and act as fans of their respective teams, even if they are both in the same city. Sports fans want to share their views and opposing perspectives, but also reaffirm shared ideals with others who feel the same as they do (Ragas and Kiouisis 2008).

Accordingly, fans of the same sport, in the same city, desire to commune and associate with others like them and dissociate with the opposition even if it is comprised of neighbors, co-workers, and even relatives who might live next door. Social identity, like identifying as a fan of a particular team or sport, is linked to peoples' connection to those teams and players (Turner 1982). These connections dictate the roles of fans, how they see themselves in their roles, and how they behave and interact with their fellow fan group members (Fink et al. 2009). For example, people tend to gravitate to these groups comprised of people most like themselves, which again helps explain why fans will pour into the streets to celebrate or commiserate with their fellow fans and why a Green Bay sports bar might exist in Chicago. Fan group members' identifications are also evident in their engagement with both the team and fellow fans during the heights of fan exuberance or the depths of despair. Their identification with the team is important during the competition on the field, but their identification with the fan group takes on a separate role following these times of extreme happiness and sadness after the competition on the field is over. Sanderson et al.'s (2016) analysis of group

identities found that the prominent themes among group members included: (a) renouncing fandom; (b) punishment commentary; (c) racial commentary; (d) general criticism; (e) attacking other group members; and (f) presenting the ‘facts’ of the case (p. 309). Moreover, they discovered that these themes were evident in social media communication, as well face-to-face interactions, with 75% of Facebook conversations and 100% on Twitter focused on these six themes for sports fans. Sanderson et al. (2016) focused their study on social activism and its effects on fans. They found that social media provide the means for fan groups to disagree, but also reinforce their bonds while challenging societal norms in the face of changing public opinion.

The general negativity of these themes confirms Branscombe et al. (1999) findings that a value threat, such as a criticism against a team or player, acts as a threat to the entire fan group. Consequently, the overall feel of the group experience for sports fans tends to lean toward denigrating the opposition more than boosting the favored team or athlete. The group identity for most sports fans rests on their reliance to band together to fend off the opposition through negativity. Once again, and not surprisingly, this negativity seems to have increased as social media use increased, especially among Twitter users, which seems to be the most vitriol of social media platforms (Browning and Sanderson 2012, Ferrara et al. 2016). The evolution of sports fan groupthink appears to move into a type of safety in numbers mentality – it is much easier to criticize or even insult others when there is a group of other like-minded individuals to supply backup. This type of involvement on a communal level tends to affect those members with the greatest vested interest in the team. Essentially, those whose personal identities are so thoroughly intertwined with the team they support experience games differently than those within the group who feel as though they have less hanging in the balance on a win or loss. The stronger the fandom level, the stronger the need to be involved with the team. “Diehard” fans require the most maintenance in their sports team relationships.

Sports Team Identification and “Diehard Fans”

Funk and James (2001) recognized that team fandom is directly affected by fan involvement with the team, known as Sport Team Identification (STI). Keaton et al. (2014) furthered this idea finding that the psychological effects of sports fandom are more connected with STI than purely emotional responses, which might include variables such as family, team characteristics, and athletic performance. This means that the identifications and relationships developed through sports fandom run deeper than the individual superficial variables associated with fandom. In other words, the overall fan experience is more important than on-field results, scores, family traditions of rooting for a specific team, etc. Rather, it is the culmination of these variables that make sports fans who they are – essentially, the sum of fandom is greater than its parts. Furthermore, these effects are much greater in fans who self-identify their allegiance to a team as central to their overall identity compared to less-identified fans. Devlin and

Brown's (2017) study of 715 sports fans found that personality traits are directly related to team identity, which in turn, affects the amount of involvement fans need and who they need it from. The unique traits or characteristics of a team and city can therefore greatly affect fans' identities. That is, a Los Angeles Rams fan will differ in their personality traits than a Green Bay Packers fan because of the difference between the teams, but also because of difference in their home cities. These traits include honesty/humility; emotionality; extraversion; agreeableness; and openness to experiences. Without these traits, "fair-weather" fans will not likely ever evolve into "diehard" fans.

The reasons individuals choose to consume sports coverage, which directly influences their self-identity as casual or "diehard" fans, comes from the dispositions of the individuals and their emotional responses to games; the content or drama of the game; as well as the fulfillment one receives by being around other similarly minded fans (Raney 2013). The evolution from the individual, non-fan to the "diehard" fan can be seen as a transformation of the individual in terms of identity, psychology, and interactivity with others, which helps to reinforce and cement the eventual transformation into the "diehard" fan. Figure 1 illustrates the differences in the developmental decision-making processes of the "diehard" fan versus the casual fan.

Discussion and Conclusion

Based on the preceding insight literature review, it can be concluded that the development of the sports fan from an individual to the "diehard" fan begins with their desire to take-on the traits and characteristics of the team and athletes most important to them. Sports fans seek out ways to develop themselves into something they feel can boost their sense of self-worth and, in later stages, a sense of belonging to a group of similarly minded individuals. The last step of this process for fervent sports fans is to distinguish themselves as fans who are most knowledgeable, most sincere, and most loyal during the teams' ups and downs – the "diehard fan". Sharing their sense of accomplishment during the developing stages of sports fandom with other fans through communal experience is of immense importance to them. Fans at this level gather with others who share a similarly strong sense of devotion. Even lesser fans can be sought for as companionship because it provides "diehard fans" the opportunity to show off their superior levels of fanaticism to those whom they believe to be inferior. The mentality of "I've been a fan for x number of years, through the good and bad; I know all the statistics; I've been to x number of games, etc." enables the fullest most highly self-identified fan to revel in and reinforce their highly evolved sense of self-identity. Fans' personalities change and new self-identifications are made during the fan development process showing others through communal experiences the passion and pride they now possess, which they did not have prior to realizing their fullest fan potential.

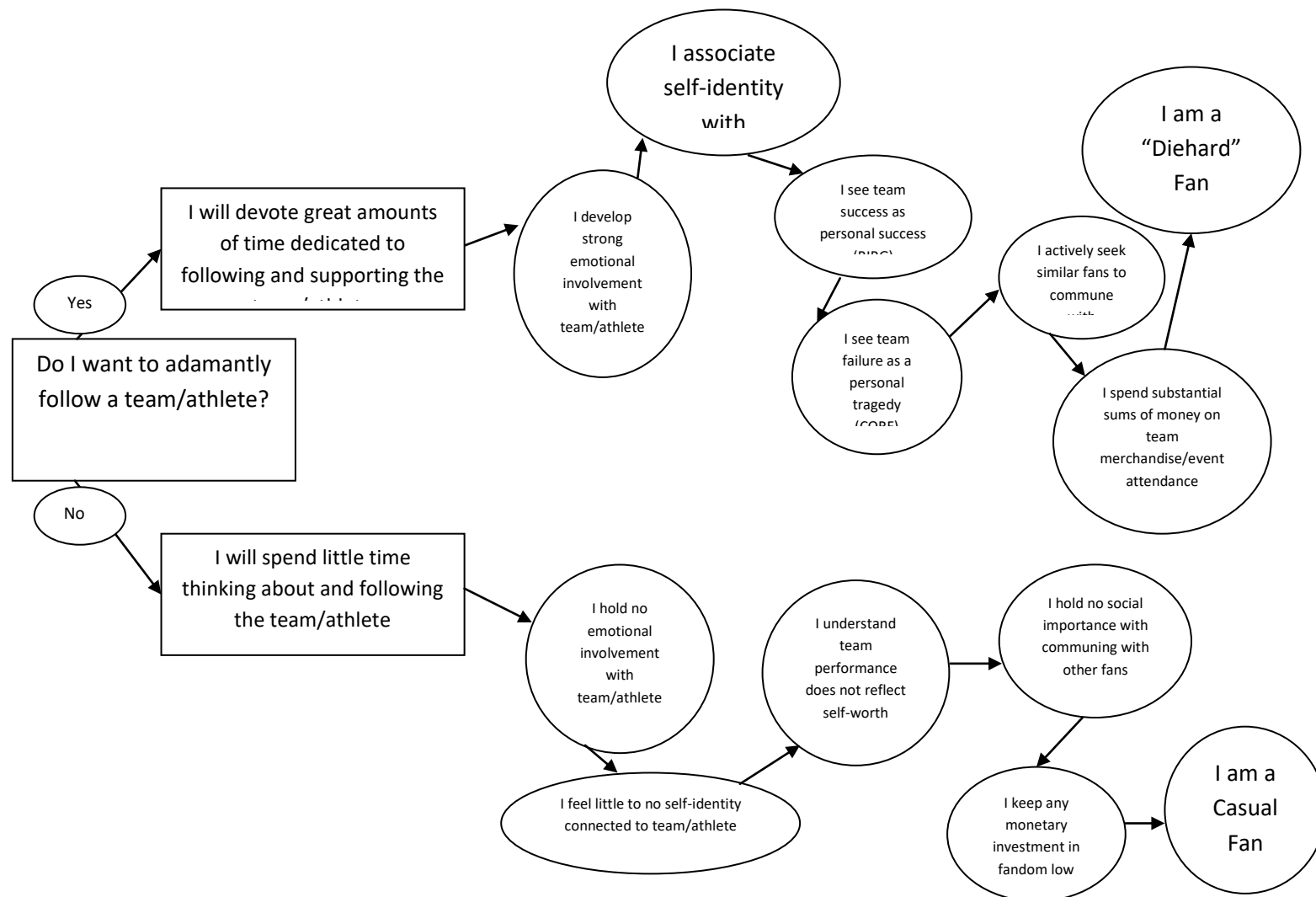
Figure 1. Decision Tree of the “Diehard Fans” and Casual Fans

Figure 2. *The Stages of Fan Self-Development and Self-Identification of “Diehard Fan”*

The development of sports fans is centered on psychological changes from within, which ultimately manifest themselves as outward societal behaviors and actions that continuously reinforce fans' self-identification. These outward expressions are a communal experience. Continued experiences, reinforced self-identities, and sustained gratifications are achieved by developing into the truest and most sincere sports fan – the “diehard” fan. Figure 2 provides a culminating summary of the processes of “diehard” sports fan development.

Suggestions for Future Research

The study of sports fandom and self-identity spans decades. In that time, research revealed the importance of sports teams and athletes on the fan psyche. The relationship between sports figures, teams, and even the cities where they compete, play an integral role on fans' sense of self and their relationships with one another. However, changes and advances in technology, public opinion, and societal issues continuously affect sports fandom. Accordingly, future research might focus on the youngest generations of sports fans. At 77 million, Millennials make up not only a substantial portion of the population (1/2 times larger than their predecessor Generation X), but are uniquely described as “...creative, solution-focused, socially conscious, and team-oriented” (Devaney 2015, p. 1).

They are the first generation wholly raised with the internet; the first mass users and consumers of social media; and the first to grow up with cellphones as constant companions. This generation is profoundly different from earlier ones in their communication styles and information gathering savvy. Accordingly, they communicate differently, consume information differently, and think about their world differently. More future research on sports fandom should focus on how and why Millennials relate to their favorite teams and athletes compared to previous generations. While research has been done on social media and sports fandom, the fact is that social media platform usage changes so frequently and is replaced by this generation so quickly (Instagram use by Millennials now surpasses Facebook, for example). In addition, research centered on Generation Y might contribute even more revealing information on sports fandom as the generation matures. Therefore, research into the ways Millennials and Generation Y use technology to follow teams and athletes; how they relate to their fellow Millennial/Generation Y fans; and even if sports fandom is as important to them as it was for earlier generations might provide a revealing look into the future of sports fandom and its impact on social-identity, the communal experience, and whether “diehard fans” will even exist in the future.

The COVID-19 pandemic affected every part of life for nearly everyone all over the world. Its effects on sports and sport fandom are profound. Sports seasons were either put on hold or cancelled completely. Even in late 2020, sports stadiums remain empty as teams play to recorded crowd noise. Tailgating is banned. Future research into the pandemic's effects on the sports world might show how the complete loss of competitive sports for several months affected

fans. Questions of how quarantine restrictions touched the psychological, sociological, and emotional lives of sports fans during this time might reveal new and fascinating insights into the importance of sports fandom on millions of people who were suddenly and unexpectedly without a major part of their lives.

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Appendix A. Search Strategies

Articles sourced from the following four databases focused on social and psychological relevance to sports fandom development as it relates to how and why an individual becomes initially interested in fandom and progresses to a strong, die-hard level. Articles relating to branding, marketing, political attitudes, gender, and non-sports fandom, such as pop music, were excluded. Articles published before 1968 were excluded.

Database	Keywords	Results	Articles
JSTOR	Fandom AND Identity	2,722	1,390
	Fandom AND Sport	932	410
	Sports Fan AND Development	15,091	5,789
	Sports Fan AND Identification	4,551	2,300
	Sports Fan AND Motivation	3,453	1,462
	Sports Fan AND Relationships	8,178	3,166
	Sports Fan AND Communal	2,890	931
	Fan Socialization	2	2
	Fan Community	169	169
	Sport Socialization	49	49
	Athlete Brand	4	4
	Total	38,091	15,290

	Keywords	Results	Articles
ProQuest	Fandom AND Identity	2,343	1,598
	Fandom AND Sport	2,062	831
	Sports Fan AND Development	32,663	9,550
	Sports Fan AND Identification	5,996	3,960
	Sports Fan AND Motivation	7,427	3,617
	Sports Fan AND Relationships	29,643	9,391
	Sports Fan AND Communal	1,969	1,021
	Fan Socialization	3,592	3,088
	Fan Community	159,138	42,945

Sport Socialization	11,562	10,118
Athlete Brand	23,485	3,693
Total	277,537	78,664

Database	Keywords	Results	Articles
Communication Source	Fandom AND Identity	99	86
	Fandom AND Sport	74	61
	Sports Fan AND Development	66	40
	Sports Fan AND Identification	55	41
	Sports Fan AND Motivation	27	19
	Sports Fan AND Relationships	110	85
	Sports Fan AND Communal	2	2
	Fan Socialization	942	942
	Fan Community	7,416	7,416
	Sport Socialization	1,846	1,846
	Athlete Brand	1,076	1,076
	Total	11,548	11,528

Database	Keywords	Results	Articles
Academic Search Ultimate	Fandom AND Identity	212	205
	Fandom AND Sport	374	294
	Sports Fan AND Development	705	282
	Sports Fan AND Identification	316	276
	Sports Fan AND Motivation	152	104
	Sports Fan AND Relationships	846	423
	Sports Fan AND Communal	16	9
	Fan Socialization	3,736	3,736
	Fan Community	80,562	80,562
	Sport Socialization	13,818	13,818
	Athlete Brand	4,149	4,149
	Total	104,181	103,768

Appendix B. Inclusion and Exclusion Criteria

Study Characteristics

	<i>Description</i>	<i>Inclusion</i>	<i>Exclusion</i>
Study Focus	Studies focused on the psychological and sociological factors affecting sports fan development	Empirical studies that describe the relationship between identity, self, community, and sports fandom	Empirical studies that describe the relationship between identity, self, community, and non-sports fandom
Outcomes	Study results centered on variables relating to sports fans' thoughts, behaviors, and actions	Outcomes relating to fandom, identity, development, identification, motivation, relationships, and communal experiences	General fan activities not relating to the psychological and communicative essence of sports fandom
Study Method	Empirical	Qualitative and quantitative methodologies	Experimental methodologies
Data	Observable	Sports fans' natural actions and behaviors reflective of their thoughts	Manipulated variables affecting behaviors
	Communication	Written and spoken language	Language resulting from artificially produced variables

Study Characteristics

Year of Publication	Studies from 1968	Studies prior to 1968
Publication Language	Articles written in English	Articles not written in English
Publication Status	Accepted articles published in books and peer-reviewed publications	Self-published works, encyclopedia entries, and editorial commentary

Game-Play Language and Game-Play Intelligence – Wording, Planning, and Enacting Action Plans in Team Sports

By Paul Godbout* & Jean-Francis Gréhaigne⁺

The purpose of this paper is to discuss, in a socio-constructivist context, the development of students' game-play language and game-play intelligence through their wording, planning and enacting of action plans in team sports. At the beginning, the authors offer a brief recall of the basics of constructivism and social constructivism. They discuss students' perception of game-play reality, assimilation, accommodation and adaptation in relation with learning strategies in team sports. Then, they consider the development of a common game-play language and the evolution of students' exchanges over successive debate episodes interspersed with sequences of play. Beyond facilitating tactical learning, student construction of a common game-play language is seen as way to alleviate initial differences among students in terms of past sport experiences. Following theoretical considerations on the relationship between thinking and the development and the use of intelligence, the authors discuss the development of game-play intelligence and tactical thinking, considering the complementary use of convergent and divergent thinking. Finally, learners' awakening to metacognition is discussed in relation with the socially shared regulation of learning one may expect in a socio-constructivist approach to tactical learning in team sports.

Keywords: *debate-of-ideas, divergent thinking, student/player exchanges, strategy thinking, tactical thinking*

Introduction

In the teaching/learning of team sports, a characteristic common to several game-based approaches, in addition to being student-centered, is the use of exchanges between learners and between learners and their teacher as well (Kinnerk et al. 2018). Depending upon the particular model, modalities of exchanges may vary from questions and answers between the teacher/coach and the students/players, to more or less extensive debates among students/players. With regard to student verbalization, it has been suggested that student exchanges ought to rely more on divergent thinking, facilitating the pursuit of tactical learning (Harvey et al. 2016, Light and Georgakis 2005). This is especially so in a socio-constructivist approach where students are expected to collectively develop their tactical learning. The quality of students' exchanges relies, among other factors, on the extent of their conceptualization of game-play related constructs and on the extent and precision of game-play related terminology. While the

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former may be associated with game-play intelligence the latter relates to game-play language, two constructs that will be discussed in this article.

The purpose of this article is to discuss, in a socio-constructivist context, the development of students' game-play language and game-play intelligence through their wording, planning and enacting of action plans in team sports. Following a brief recall of operational basics of constructivism and socio-constructivism, we will examine students' learning of game-play related concepts and language and discuss the development of tactical thinking and game-play intelligence. Finally, we will consider the repercussion of the regulation of developing game-play intelligence and tactical learning on learners' metacognitive awareness.

The Socio-Constructivist Process in a Tactical-Learning Context

Basics of Constructivism and Social Constructivism

Piagetian theory postulates that "human learning is constructed, that learners build new knowledge upon the foundation of previous learning" (Bada 2015, p. 66). The theory acknowledges three phases in the child's learning process, in relation with his/her perception of reality: assimilation, accommodation, and adaptation. Assimilation occurs when a learner receives new information or perceives a new situation and manages to fit that information or reality into an already existing mental scheme. Accommodation occurs when a learner transforms a pre-existing mental scheme in order to take into account dissonant perceptions of reality. Adaptation represents a state of balance between assimilation and accommodation, a phase when the reality perceived, whatever its variations, fits into the learner's mental scheme (Piaget 1962). Although not specifically pinpointed as part of the process, readers will note that whether going through assimilation, accommodation or adaptation, the learner first reacts to some type of perception of reality. Perception of reality is a starting point not to be overlooked in a deliberate and organized learning context.

Besides postulating that children construct their learning into mental schema, based on received information, Vygotsky's theory considers that they are also influenced by adults, their peers and their social environment (Yvon and Zinchenko 2011). In other words, the child's development is socially situated and constructed through interactions with others.

Socio-Constructivist Perspective of Learning in Team Sports

In physical and sport education, activities involving interacting participants offer a teaching/learning context particularly propitious to a socio-constructivist approach. This is even more so with team sports where collaboration with several teammates, while opposing several other players, is essential for success. Table 1 provides a general framework for students' social construction of knowledge with regard to team sports.

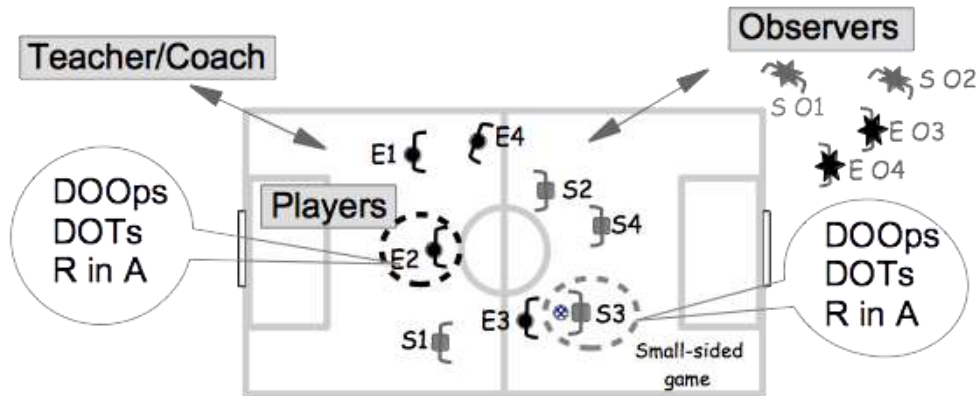
Table 1. *Social Construction of Knowledge in Team Sports: General Framework*

Learning phases	Related learning strategies
Perception of reality Perception is the process through which an individual takes into account objects or characteristics present in his/her environment.	In a team-sport teaching/learning setup, one may envision various information-retrieval strategies such as (a) direct observation by the learner, (b) reflection on action, (c) verbal interactions with peers involved in game play, (d) verbal interactions with teammate-observers, (e) verbal interactions with the teacher. In coaching contexts, video-feedback may also be considered.
Assimilation Assimilation is the process through which declarative or procedural knowledge is integrated by the learner who can then apply it.	Assimilation may occur with students' acquisition of declarative knowledge relating, for instance, to game-play terminology and play organization rules. It may also occur when students' convergent thinking is at work, for instance in problem-solving situations when the task is to apply the proper operations at the proper time (use of known procedural knowledge).
Accommodation Accommodation corresponds to the adjustment made by modifying one's knowledge or procedural knowledge when it proves to be inoperative in a new situation.	Accommodation, corresponding to the effective construction of tactical knowledge, is likely to occur in situations requiring divergent thinking on the part of the learners. Student observation of game play, exchanges and debates among students in view of solving problems encountered during prior game-play, followed by trials and verifications during consecutive matches, will solicit divergent thinking and facilitate accommodation.
Adaptation Adaptation occurs when variations of a same or similar nature in the perceived reality no longer create a dissonance with the learner's mental scheme. Adaptation is associated with stabilisation and generalisation.	Adaptation will lead to a stabilization and generalization of students' resources. There may be three progressive facets to adaptation: given successive trials of the same situation in the same conditions, learners will keep being successful; confronted to varied similar play situations, learners will display stable answers; confronted to varied similar sport activities, learners will display stable answers.

At the onset of the constructive process, learners perceive reality as they experience it. Strategies may however be implemented to provide additional information. Figure 1 illustrates a learning setup in which learners are engaged in a 4 vs 4 small-sided game. Associated with each team are two teammate-observers recording game-play occurrences based on pre-selected criteria. At times, the teacher (or coach) may also elect to observe both teams, one particular team or selected players depending upon his/her own agenda. Besides teammate-observation and teacher/coach observation, one may also consider that participant observation is at work. Indeed, as represented in each bubble associated with one player or another (players E2 and S3 have been selected for the sake of the

illustration), each player in each team may be considered as involved in a participant-observation situation. Each one may directly observe the opponents (DOOps) or observe directly his/her teammates (DOTs, while reflecting on his/her own action during game play (R in A).

Figure 1. *Observers Involved during Game Play*

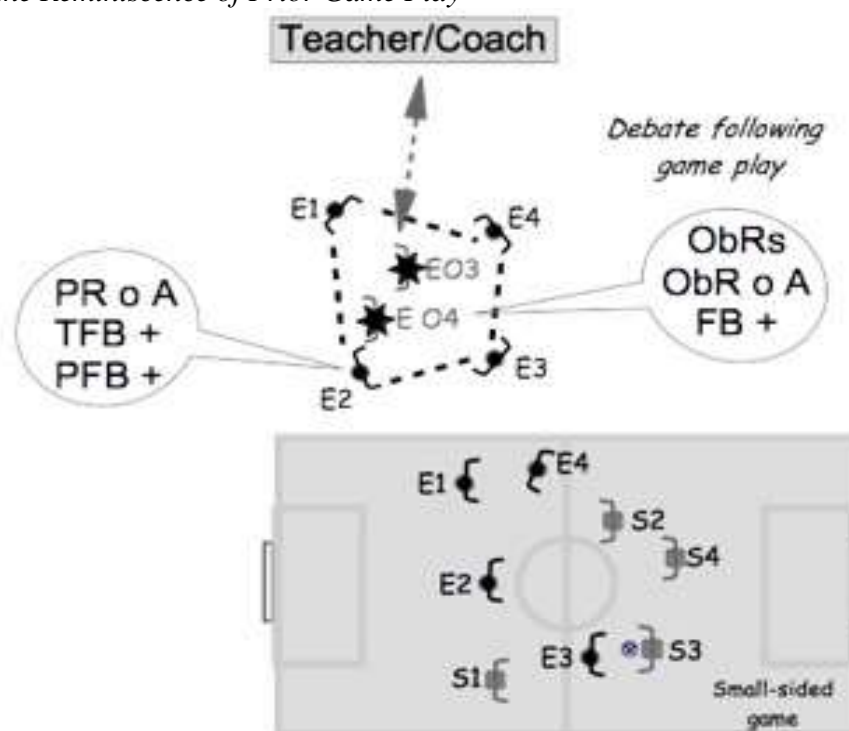


For its part, Figure 2 illustrates a learning setup in which, following a match, learners regroup on a team basis (players and observers) and proceed to exchange facts, reflections, and work hypotheses with regard to the last match and the one that will follow (summarized as debate in the Figure). Four different sources of information may be involved from the learner's point of view. We will as an example consider player E2 as a central figure of this illustration. The exchange includes the four players involved in the preceding match (E1 to E4), their two teammate-observers (EO3, EO4), and possibly the teacher/coach if he or she chooses to take part into the exchange (knowing that other debates may be going on, one of which involving team S (S1 to S4, plus SO1 and SO2 in Figure 1). The court or pitch illustrated in grey at the bottom of Figure 2 represents the reminiscence of the preceding match that is what all participants to the debate remember. One may think that as time goes by, souvenirs of the game-play sequence, vivid at first, will progressively fade in each person's mind. The grey representation of the playing area illustrates the reservoir of souvenirs at each participant's disposal. The bubble associated with player E2 identifies information received or given by the player: (a) the information may come from reflection on prior game play, or reflection on action (player reflection on action – PR o A); (b) the information may come from playing teammates as augmented feedback (TFB +); (c) the player may provide augmented feedback to his playing teammates (PFB +). Finally, player E2 will receive information, or feedback, from his/her teammate-observers and, possibly, from the teacher. For its part, the bubble associated with teammate-observer EO4 identifies information processed by this student: (a) communication of observational results to teammates (ObRs); (b) observer's personal reflection on play actions witnessed (observer reflection on action – ObR o A) (c) communication of additional feedback on aspects of game play not included in pre-selected observational criteria (FB +).

In the two learning setups illustrated in Figures 1 and 2, exchanges between

teammates and between students and the teacher are numerous. Exchanges with the teacher may concern feedbacks or at times take the form of questioning on the part of the teacher and answering on the part of students. Closed questions (recall or convergent) may be "associated with, for instance, the management of game-play rules, the proper way to name game-related concepts, and so on. However, resorting to open-ended (divergent) questions is critical to elicit students' tactical thinking and the development of their tactical procedural knowledge" (Gréhaigine and Godbout 2020, p. 2). Similarly, students' planning of strategies during their debates will solicit their divergent thinking. Such learning setups demonstrate implicitly the fundamental importance of language for players and observers to function properly.

Figure 2. Information Sources in a Student-Exchange Setup with, as Background, the Reminiscence of Prior Game Play



Developing Game-Play Language: The Student/Player-Speaker

Verbalization facilitates learners' reflection, understanding and observation by providing a database in view of exchanging with other players. One must differentiate the learner's construction of tactical knowledge and his/her acquisition of game-play language. Through past experiences, children have likely developed a basic language related to everyday games and leisure activities, summer camps, and so on, although there may be significant differences among students for different reasons [socio-economic, cultural, familial, and so on (Gréhaigine et al. 2017)]. They would be familiar with terms like throwing, catching, kicking, dodging and the like. At this point, most of that language would relate more to

motor skills than to tactical skills. The latter are referred to in a semiotic code that learners must learn to share if they are to exchange among themselves and with their teacher or coach.

Toward a Common Language

Through past experience, players learned to use proper words to refer to one aspect of reality or another. Thus, learning team-sport related terminology fits their existing mental scheme and they can readily assimilate new words. *Assimilating* team-sport related terminology ought to be a situated process in the sense that there would be no use for a learner or a group of learners to develop a language of their own. The terminology already exists within the social environment and the community's culture. Within the boundaries of his/her pedagogical content knowledge, it is the teacher's responsibility to transmit this declarative knowledge through straightforward information, recall questioning or similar teaching strategies. In terms of learning, the process involved would be assimilation on the learners' part as alluded to before in Table 1. The development of a common game-play language will counter the initial difference among students mentioned above at the beginning of the present section. Readers will keep in mind that "terminology" refers to the words people agree to use to label things, movements, phenomena, occurrences, emotions, strategies, action rules, and so on. In the learning process, labelling something implies that the learner, unlike parrots, understands the meaning of the word, what that something is; the learner must grasp the underlying concept involved.

At first, in relation with observation, the teacher who masters pedagogical content knowledge (Chandler 1996) is well positioned to transmit to the class group the standard terms that express in words facts perceived by players and observers. At a higher level of abstraction, an explicit wording of a given individual or collective behavior or tactical answer conceived by learners may be associated with a play organization rule (POR) or an action rule (AR) (Gréhaigne and Godbout 1995) generally agreed upon by everyone. Through accommodation (see Table 1), learners construct, or reconstruct, these rules and then consciously use the word, notion or concept corresponding to the idea they developed. This way, resorting to verbalization in team sports makes it possible for learners to build a common team framework and recognize, on a conceptual level, action rules, play organization rules, notions of configuration of play, of effective-play space, of competency network, and so on (Gréhaigne and Godbout 1995, Gréhaigne and Godbout 2014).

The notion of language of the sport has been discussed by Caron and Pelchat (1974) with respect to Ice Hockey and by Mérand (1990) with respect to Basketball. According to Caron and Pelchat (1975, p. 52), "team-sport language seems to differ from one sport to the other. Such a conclusion implies that, from a pedagogical point of view, learning a team-sport language should mean learning the communication mode specific to that sport". Indeed, this may be true for high-level sport, or non-invasive team sports (Ramos et al. 2020). Discussing the matter of a common language for ice hockey, Nadeau et al. (2014) submitted that beyond

a general point of view where one finds a team-sports language (particularly with reference to similar sports, like invasion team-sports for instance) sharing common references, there remains the need for communicating about characteristics specific to a given sport based on specific play organization rules. For their part, referring to the principle of generalization of tactical learning across a variety of team sports, Gréhaigne et al. (1999) were of the opinion that students ought to develop a language that could be used with regard to the greatest possible number of activities. With these nuances in mind, we will, in this article, put forward the notion of game-play language in team sports.

That being said, during their debates or exchanges, learners resort back and forth to their everyday language, for general comments, and to game-play language for exchanges concerning subject-matter elements or tactical and strategic aspects of game-play.

Evolution of Exchanges

At first, words reflect the learners' need to communicate their interpretation of a situation experienced during game play. Through exchanges with peers, a reflective distancing sets in between the learner and his/her past actions (see Figure 2), generating a description and perceptions of game play. Thus, having contributed to the reflection on past action, language becomes a favored tool for putting forward game-play related concepts. Exchanges between learners denote the acquisition of a common language of play (Ramos et al. 2020) but also an evolution of the conception of game play, its components, its rules, and its tactical aspects.

It is no longer a matter of extracting game play from time for the sake of describing play actions or reflecting on them as illustrated in Figure 2. It becomes a matter of abstracting concepts or constructs from experienced or perceived occurrences and conceptualizing game play. Two complementary facets of conceptualization appear to be at play. First, through convergent thinking, learners may analyze, compare, categorize, differentiate, explain, synthesize. Then, stepping further in the construction process, they resort to divergent thinking to imagine, create, invent solutions and verify their appropriateness. As we will discuss later, this conceptualization process leads to tactical awareness and progressive understanding of game play (Gréhaigne and Godbout 1995, Godbout and Gréhaigne 2020b, Ramos et al. 2020).

Considering the qualitative aspect of learners' verbalization, it has been observed that debates or exchanges following game-play episodes modify interrelations between teammates, student-speakers becoming co-actors of the learning process. Indeed, exchanges may be shaped by one or the other of several contention levels. For instance, based on studies conducted by Nachon and Chang (2004) and by Chang (2009), one can submit the following five contention levels:

- *assertion*, which consists in describing and questioning experienced action plays in order to clarify their determinants and compare them to others;
- *judgment*, which consists in prioritizing, qualifying, and debating observed

- facts depending upon their plausible issues;
- *proposal*, meaning the formulation of decisional alternatives, a gateway for possible actions;
- *persuasion*, which consists in trying to convince a teammate to collaborate in a collective action;
- *conviction*, which consists in stating ideas and/or principles considered as fundamentals with a high degree of certainty based on proofs.

Game-play language evolves as understanding and tactical awareness increase, a result of the accommodation process. Both understanding and tactical awareness also concur to the development of game-play intelligence.

Understanding Game Play, Game-Play Intelligence and Tactical Thinking

Understanding Game Play

Beyond a first level of understanding related to language and alluded to previously, the learners' challenge remains to understand the notions of POR and AR (Gréhaigne and Godbout 1995) and to construct them throughout the learning process while taking into account their motor and physical capacities. As a facilitator, the teacher will progressively put at their disposal a series of reference concepts (or constructs) related to game-play language such as a game plan, configurations of play, effective-play space, offensive and defensive matrices of play, respective competency network of each team involved, and so on (Gréhaigne and Godbout 2014). Understanding for succeeding indeed, but also succeeding for understanding. Understanding helps formulating action hypotheses; confirming the validity of the hypothesis, which offers a solution to problems encountered in the match, compels a critical analysis of reasons for this success and reinforces learners' understanding.

So far, we have mentioned on a few occasions the accommodation process learners go through while constructing knowledge. Accommodation refers to the learner's adjustment of schemas or cognitive frameworks as a result of new information or new experiences. It may also involve the development of additional schemas leading to conceptual networks. During game play, in a learner-centered approach, players are continuously faced with unexpected offensive or defensive problems they are challenged to solve instead of waiting for the teacher/coach to provide ready-made answers. Through exchanges with teammates, hypotheses, verifications and confirmation through game play, players *understand* that a given reality differs from what they thought and readjust their schemas accordingly; they learn through accommodation. They also learn through understanding, which explains Chandler's phrase "Understanding for learning" (1996, p. 51) or, as expressed by the National Research Council (NRC) (2000, p. 8), "...learning with understanding".

Throughout debates/discussions among themselves and experimentation on the court, learners adjust their schemas to the point where the reality they

experience is more and more in harmony with their schemas: they have adapted, as we have defined "*adaptation*" in Table 1. After stabilization, one may assume players use their tactical knowledge through convergent thinking; they are on a familiar ground. Following stabilization, a further step may be planned by the teacher in order to engage students into a generalization process. "With respect to generalization, teachers should encourage students to look for similarities between, for instance, invasion team sports in terms of tactics, action rules, matrices of play, prototypical configurations of play (PCPs), and so on". (Godbout and Gréhaigne 2020a, p. 12). As learners attempt to generalize their tactical knowledge across other team sports and experience different, although similar, realities, the accommodation process may resume temporarily, along with more divergent thinking until new adaptation sets in, and so on.

We submit that the progressive construction of understanding leads to the elaboration of a tactical knowledge base and conceptual networks likely to be used in convergent or divergent thinking processes. Convergent thinking will be at work when learners choose a tactical answer related to a familiar resolution context, whether nonlinear or not. Divergent thinking will set in when learners are looking for new answers in an unfamiliar context, possibly related to new constraints (e.g., new rules, new opponents). Such an assertion brings us to consider what we will call game-play intelligence, as well as tactical thinking.

Game-Play Intelligence and Tactical Thinking

Theoretical Considerations

Somehow, electing to discuss intelligence and thinking in a team-sport learning context is like inviting oneself to a buffet where supply largely exceeds demand. In such a case, we submit that the pragmatic solution is to make a choice, identify it and stand by it as suggested by Schlinger (2003, p. 21) who wrote "...perhaps behaviour scientists should instead take a more Darwinian view and look at the specific behaviours in their contexts that we label "intelligent," and then analyse them according to their function in those contexts".

The French *Centre national de ressources textuelles et lexiques* (CNRTL) [National center for lexical and textual resources] offers, among several others, the following operational definition of intelligence (2020a): in new circumstances for which instinct, learning or habit has no solution, [intelligence is] the *aptitude* for (a) grasping (comprehending) and organizing situational data, (b) putting together procedures to be used and the final aim, (c) choosing appropriate means or (d) discovering original solutions that will allow an adaptation to the requirements of the action. Such a definition fits particularly well the way we envision debates or exchanges among learners trying to find solutions to problems encountered during game play. Followed by a complement referring to an activity (game play, for example), the word intelligence is defined as an aptitude, a particular capacity, a gift for the activity concerned. As for thinking, the CNRTL (2020b) offers, among several others, the following definition: putting into operation an individual's intellectual capacities. From these definitions, we will retain that intelligence and thinking are intimately intermingled. We might consider intelligence as a capacity,

an aptitude, more or less developed depending on the amount of knowledge, concepts and conceptual networks cumulated and understood by an individual. For its part, thinking, as related to a notion of mental process, would be the catalyst or putting into action of this capacity, a transmission belt working both ways, in and out.

The intermingling of these two constructs would come from the fact that thinking favors the development of intelligence (in a **thinking** → **intelligence** relationship, like a form of conceptualization or inductive thinking), which in turn allows a further elaborated expression of thinking (in an **intelligence** → **thinking** relationship, like a form of effector thinking or implementing thinking). Both would nurture each other as the awareness of a given reality develops.

In the context of this article on team-sports and games learning, going along with the above CNRTL suggestion, we will discuss *game-play intelligence*, considering its strategic and tactical dimensions, as we have previously submitted the notion of game-play language. While recognizing that thinking contributes to the development of both strategic and tactical intelligence, we will use the notion of tactical thinking since, from our point of view, in game-play situations and faced with time constraints, tactical thinking takes precedence over reflection in action and the implementation of new conceptual links. When appropriate, the latter will apply a-posteriori at times of reflection on action.

Game-Play Intelligence and Tactical Thinking

Concerning game-play intelligence, based on Stenberg's theory of intelligence (1985, 2005), we will use the notions of analytical intelligence and creative intelligence. Analytical intelligence is the capacity of analyzing, evaluating, judging, comparing, contrasting. It is thus related to convergent thinking, focused on problem solving based on known procedures. For its part, creative intelligence makes it possible for the learner to invent or imagine one or different solutions to a new problem; it relies on divergent thinking as we have alluded to previously. One may reasonably assume that when debating or exchanging during "tactical pauses" between matches, learners will make use of both types of intelligence whereas, most of the time, convergent thinking (as an expression of analytical intelligence) will prevail in game-play situations under the pressure of time constraints. Gréhaigne and Godbout (2020, p. 7) have recently written "During the match, faced with unexpected evolution of game play and under time constraints, students can no longer rely on thoughtful tactical reasoning. They need to resort to stored procedural tactical knowledge and be able to anticipate opponents' and or teammates' moves (Gréhaigne et al. 2001, Taylor 2016)".

From this point of view, we will not consider the notion of tactical creativity offered by Memmert (2011, p. 373) who wrote: "Tactical creativity is defined at the behavioral level as the unusualness, innovativeness, statistical rareness, or even uniqueness of solutions to a related sport situation in team-ball sports". According to this author, creativity is associated with the player's divergent-thinking ability used during game play, hence its rarity or uniqueness if one takes into account the various constraints related to game-play situations. Although it is true that it can be felt sometimes with expert players (the names of Gretzky and Lemieux come to

mind in ice hockey and those of Cruyff and Platini in soccer), we do not think that the concept rightly applies in a learning environment involving beginners or novice players. We nonetheless agree with Büning et al. (2020) that the frequent use of divergent thinking combined with the exposure to various sport activities, a choice discussed in the *Understanding Game play* section of this article, may indeed concur to the development of creative potential and problem-solving capacity in young players.

As alluded to previously, under time constraints during a match game-play intelligence manifests itself through tactical thinking when unexpected situations occur with regard to the team's strategic plan. We have mentioned that the player's resort to divergent thinking is theoretically possible in an unusual moment of innovativeness; however, the temporal cost of such a choice may prove to be high. During game-play, the most appropriate approach is likely resorting to convergent thinking, the player reacting according to conceptual representations already available through game-play intelligence, a capacity referred to as "tactical intelligence" by Gréhaigne (2014b) and by Memmert (2011). Among such conceptual representations, one finds, for instance, offensive and defensive matrices of play, prototypical configurations of play, action rules, data regarding respective teams' competency networks, and effective-play spaces (Gréhaigne and Godbout 2014). Spotting the effective-play space may give a player a useful input at the tactical-thinking level, taking into account the player's perception of the configuration of play, his/her capacities, and what he/she knows of the teammates' and opponents' competency levels. All these conceptual landmarks develop through divergent thinking over successive lessons, debates with teammates, and the teacher's contributions, in contexts where learners have time enough at their disposal for integrating this knowledge and enriching their game-play intelligence. Then, when faced with the urgency of game play, the player's convergent tactical thinking takes over as he/she "tries to sustain at their minimum play-related constraints, uncertainties and randomness, while using to their maximum the capacities, potential and competencies at his/her disposal" (Gréhaigne 2014b, p. 32).

Through game-play intelligence, an "intelligent" player may anticipate teammates' or opponents' movements and even some evolution of configurations of play. In fact, one may consider two facets to anticipation of play. On the one hand, while preparing for a coming match, players may display *strategic anticipation*, planning possible reactions to plausible configurations of play, given their advance knowledge about opponents' competency network or preferred strategies (Mouchet 2014). On the other hand, as most often is the case, anticipation refers to *tactical anticipation*, that is, this "thinking leap" performed by a player sensing what will be a teammate's or an opponent's next move and reacting accordingly. Such a mental operation should not be mistaken for a dicey form of anticipation, be it an educated guess, a tactical choice discussed by Verscheure and Amans-Passaga (2014). Nadeau et al. (2020) had 18 Hockey players and 36 Football players describe each two critical incidents, referring to their last match: (a) one incident where they thought they had taken a good tactical decision during game play and (b) one incident where they thought they had taken

a bad tactical decision during game play. Players were also asked to explain why they considered their decision as good or bad. Players answered the questionnaire on several occasions during their competition season. Among 289 reported positive decisions and 117 negative ones, players evoked offensive and defensive principles of game play. Moreover, on a few occasions, players described situations in which they had anticipated teammates' or opponents' actions. The authors concluded that these cases of anticipation "showed a better level of game-play understanding that went beyond the simple description of an experienced game-play situation" (p. 108; quotation translated by the authors).

With regard to tactical anticipation, research conducted with "expert" players in relation with anticipation show that (a) they make better use of information coming from their opponents' posture orientation, (b) predict more precisely the outcome of a given situation of play, and (c) remember or recognize rapidly and accurately structured patterns in situations of play (Stevenson 2013, Williams and Jackson 2019). Recognizing or reading game play rapidly implies thinking speed, a construct closely associated with the notion of anticipation according to Gréhaigne (2014a).

Players' game-play intelligence helps them (a) coordinate their actions with those of teammates, (b) interpret the evolution of configurations of play in relation with opponents' movements, that is (c) construct a capacity of anticipating and conceiving collective actions with their peers (Fernandez 2002). Concerning the matter of collective actions, Duarte and Frias (2011) have referred to the notion of collective intelligence. According to these authors, one may consider a team's performance as a collective intelligent behavior that is not centered on a particular player's consciousness but is rather distributed among all players. This reasoning, related to players' tactical behaviors within a team, connects with the notions of inter-player coordination (Memmert et al. 2017) or intra-team movement synchronization (Goes et al. 2020). Without assenting to the notion of collective intelligence as such, we concur with the idea that shared construction and stabilization of tactical knowledge, through socially shared regulation (Godbout and Gréhaigne 2020a), may lead to somewhat "empathic" tactical behaviors within a given team. To that effect, in relation with socio-economy- and gender-related differences in the classroom, the management of pedagogical learning content and learning setups is crucial (Poggi 2016). In order to reduce the gap between school and familial cultural environments, exposing students with difficulties to legitimate contents, or on the contrary adjusting the latter to the point of expelling all formative content, are not the solution. Teachers should rather offer their students sufficiently substantial-content situations likely to allow all students the construction and use of situated knowledge (Gréhaigne et al. 2017).

Learners' Awakening to Metacognition

We have seen in Table 1 that the knowledge-construction process starts with the learner's perception of reality. Figures 1 and 2 illustrate information networks that may come into play during and after game play, helping learners to perceive

that reality associated with game play. In the above section on Understanding Game Play, we have seen that learners involved in the accommodation process, when faced with new game-play related problems, exchange/debate with teammates, put forward action plans and test them in following sequences of play. Operationally, they are *regulating* their learning, mentally trying to accommodate.

"Teaching practices congruent with a metacognitive approach to learning include those that focus on sense-making, self-assessment, and reflection on what worked and what needs improving" (NRC 2000, p. 12). This statement by the National Research Council clearly suggests that a constructivist approach to learning can hardly ignore the benefits of learners' metacognitive awareness. This we believe applies not only to tactical learning but to the development of the underlying game-play intelligence as well. Ever since the term appeared in the literature in the 1970s (Dinsmore et al. 2008), and despite its complexity, metacognition continues to fascinate researchers (Alexander 2008), teacher educators (O'Hara et al. 2019), and practitioners (Gascoine et al. 2017). As alluded by Dinsmore's et al. (2008) reference to the work of Vygotsky and Piaget, there is a definite connection between metacognition and constructivism, a connection which has been discussed on several occasions since the 1990s (e.g., Bay et al. 2012, Carr and Biddlecomb 1998, Fayol and Monteil 1994).

The classification of types of metacognitive knowledge has undergone parallel developments in three main research areas: computer science, psychology, and pedagogy. Although deliberations from these three areas often use a similar terminology, it is uncertain that constructs identified by the same terms are always equivalent from one domain to another and the notion of metacognition encompasses several distinct components within as metacognitive knowledge, metacognitive experiences and metacognitive skills or skillfulness (Gascoine et al. 2017). Given the plethora of metacognition-related constructs one finds in the literature (see, for instance, Bay et al. 2012, Gascoine et al. 2017, Langdon et al. 2019, McCormick et al. 2013, Quigley et al. 2018), there is definitely the risk for the teacher/coach, when drawing learners' attention on the metacognitive process, of reverting to a teacher/coach-centered rather than student-centered approach, the underlying miscomprehension being that students must master the concepts before they can proceed with learning. At this point, from a constructivist and socio-constructivist point of view, we submit that a suitable approach would be to draw learners' attention on the notion of metacognitive awareness, getting them to understand that there is a possibility for them to think about the way they learn to play tactically.

As stated by Godbout and Gréhaigne (2020b, p. 441), "becoming conscious, for instance, of the conditions that made [them] construct new tactical knowledge is not to be considered a black or white incidence, a Eureka moment, for most if not all students". O'Hara et al. (2019) have described a 4-stage metacognitive continuum, from a first *no awareness/no action* stage to an *awareness/appropriate action/range of flexible strategies* fourth one. Similarly, Perkins (1992) had suggested distinguishing four levels of metacognitive learners, from tacit, to aware, strategic, and reflective learners. While tacit learners do not think about any particular strategy for learning, aware learners begin to notice some of the thinking

they do (like suggesting solutions, finding evidence), although this is not deliberate or planned. At the other half of the spectrum, strategic learners structure their thinking, making use of problem solving, combining and categorizing, and making choices. Finally, reflective learners not only plan their thinking but also reflect upon their actual learning, making connections between the results obtained and the way they proceeded to get there.

With regard to the teaching/learning of invasion team sports, Godbout and Gréhaigne (2020b), considering that ways of learning vary among students, have suggested keys to metacognitive awareness pertaining to three categories of student experience: (a) tasks-related experiences (e.g., observing game-play, debating); (b) team sport content-related experiences (e.g., configurations of play, team-competency networks); and (c) cognitive process-related experiences (e.g., analogical reasoning, use of advance organizers). These three categories illustrate the variety of cognitive experiences learners go through while developing team-sport tactical knowledge. Equipped with proper pedagogical content knowledge, the teacher/coach may indeed play the role of a facilitator (Goodyear and Dudley 2015), inciting students or players to reflect on what helps them regulate their learning without imposing his/her own metacognitive perspective.

Above, we have alluded to the notion of socially shared regulation of tactical learning. According to Godbout and Gréhaigne (2020a, p. 13), "In a team-sport teaching/learning context, ... although ever-present, self-regulation is intermingled with socially-shared regulation in the sense that each student's self-regulation activities are voluntarily mingled with those of his/her teammates to bring about a collective action plan". Going a step further, De Backer et al. (2018, p. 1301) have defined *socially shared metacognitive regulation* as "a joint engagement of multiple learners operating on each other's metacognitive contributions when regulating the group's cognition". This evidently represents a collective challenge but makes sense once each member of the group engages in a metacognitive process while sharing thoughts and reflection with his/her teammates.

Conclusion

In this article, we have discussed the development of game-play language and that of game-play intelligence with regard to a socio-constructivist approach to the learning of invasion team sports. We have also examined how tactical thinking is intermingled with game-play intelligence. Although these cognitive processes are constantly at work when individuals engage in a sport activity, discussing them on a theoretical basis remains a challenge. Engaging in the learning of a team sport with a socio-constructivist perspective implies not only a shared regulation of learning among players, each one helping the other, but also a socially shared one since all action plans agreed upon are based on collective decision-making. Considering the regulation of learning in a constructivist perspective brings about the matter of metacognition, a construct nested with self-regulation and self-regulated learning (Dinsmore et al. 2008). As we can find the expression "tactical awareness" in the literature (e.g., Deleplace 1979, Gréhaigne and Guillon 1991,

Mitchell et al. 2013, Ramos et al. 2020, Rossi et al. 2007), so now can we regularly find "metacognitive awareness" as seen above. In this article, we have discussed the development of game-play intelligence and we may eventually examine the question of "game-play-learning intelligence" in team sports that is an individual's capacity to monitor and regulate his/her tactical-learning processes with regard to team sports.

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Which Training Strategy is most Effective for the Treatment of Binge Eating?

By Sofia Tavella^{*} & Roberta Furian[±]

The main aim of this study was to evaluate changes in attention level in response to different physical activity strategies for patients with binge eating and investigates the most effective type of training. Binge eating symptomatology is linked to attention disorders (ADHD) and motor activity is a constituent tool for their treatment. The variability of attention was used to determine the effectiveness of the sport training treatment, the physical activity protocols have been adapted for the patients in relation to their general health and emotional state. The medical team of "Villa Guerrini-Galantara" has created an open group dedicated to physical activity. The subjects were 15 and 52± SD years old, they were sedentary and volunteer to study. Attention levels were assessed at each training session with cognitive tests adapted from "Trail Making Test" and "The d2 Test" and named "T0-T1-T2-T3", before the training session (T+EX) and after the training session (EX+T). The research lasted 18 months and on the basis of the results obtained, a statistically significant difference emerges in attention level compared to hypothesis ($0.003 < 0.05p$) and between the different types of training, which concerns only the administration of the first motor work protocol (P1). The physical activity protocol P1 seems to be a promising tool for enhancing therapeutic interventions.

Keywords: attention, eating disorders, physical activity

Introduction

The references in the scientific literature and cross-sectional studies have shown how the combination of Cognitive Behavioural Therapy combined with a training program can provide assistance for the interventional treatment for patients with eating disorders diagnosis, in particular on binge eating and weight reduction (Bakland et al. 2018, Mathisen et al. 2017, Myers et al. 2017, Pendleton et al. 2002, Vancampfort et al. 2014). The basis of this longitudinal study concerns the correlation between physical activity and uncontrolled eating disorder through a direct contact between patients and sports science graduates. The aim is the investigation on the relationship between physical activity, binge eating and level of attention. The research uses the same sample in each phase and investigates the reaction of the subjects, in cognitive terms, about different types of training (Albertz et al. 2018).

Binge eating belongs to the class of eating disorders, DSM-5 classifies binge eating disorder as having a psychic pathology according to which body, food and weight are the hallmarks (He and Cai 2017). The body is intended as a mean of

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manifestation of a deep inner suffering, food constitutes the object on which one depends, both by denying it and by abusing it and weight becomes an instrument of evaluation (Loriedo et al. 2002, Dingemans et al. 2019). These elements, in psychic food pathologies, act and interfere with each other. This represents an illusory "self-care", with the underlying intent of hiding a history of trauma or abuses suffered. Obsessive thinking about food becomes an anesthetic, which has the task of filtering a profound discomfort and, at the same time, becomes the only tool to express it (Fabrizio 2019).

The DSM-5 diagnostic criteria regarding binge eating disorder provide that binge eating must occur, on average, at least once a week for 3 months and that it must meet these aspects: eat much faster than normal; eat until you feel unpleasantly full; introduce large quantities of food, even if you don't feel physically hungry; eat alone because of the embarrassment created by the quantity of food introduced; experience a feeling of self-loathing, closely matched to depression and feel guilty feeling after the episode (Dalle Grave 2013). The most evident characteristic is the excessive introduction and consumption of food, followed by anxiety, depression, stress symptoms, inattentiveness, hyperactivity and impulsivity. The symptoms of inattentiveness, hyperactivity and impulsivity are shared and associated with ADHD and mediated by negative mood. Overall, the mood is unstable and in the worst case causes the abandonment of the treatment cures (drop-out phenomenon). ADHD and uncontrolled nutrition depend on each other, thanks to compensating mechanisms that attempt to control frustration and anxiety associated with attention and organizational difficulties and that produce lower levels of awareness and dependence on internal signals of hunger and satiety (Kaisari et al. 2018).

Behavioural treatments and therapies aimed at regulating mood and attention deficits can be particularly effective in the management of both ADHD and uncontrolled eating disorder and represent a transdiagnostic approach to resilience and mental health promotion programmes. For this reason, motor activity is a valuable tool among treatment therapies, thanks to the effect of natural analgesic able to modulate anxiety and stress states, improve mood and act as an immunostimulant (Di Pietro et al. 2019, Nieman 2007).

The research was carried out at the outpatient center dedicated to the treatment of eating disorders in the structure of "Villa Guerrini-Galantara". Each patient underwent the outpatient course of his reception in the clinic, the first, second and third specialist visits to end with group therapies (Palavras et al. 2017, Treasure et al. 2003). The fundamental idea at the base of the treatment process was to manipulate different types of training in order to avoid the possible effects of the disease, in a long-term perspective, often represented by a low self-esteem, low level motivation and poor concentration (Brewin et al. 2016). All patients performed one session per week. The research premise was based on the monitoring of ADHD levels characteristic of the binge eating disorder (Cortese et al. 2007, Seymour et al. 2015), through the administration of 4 tests concerning cognitive skills and the prescription, concurrently, of four different types of physical activity protocols, in order to evaluate the degree of attention in the individual subjects before and after the execution of training sessions (Brunault et

al. 2019). The research purpose expanded not only to the role that sport activity can play in relation to the attention level, but also to promote: regular physical activity; better ability to regulate emotions; relational skills of self-esteem and self-efficacy; a reduction in dysfunctional behaviour related to food; the acquisition of adequate feeding behaviour; an improvement in the relationship with the body image (Schlegel et al. 2015, Bratland-Sanda et al. 2012, Ruggieri et al. 2006).

Methodology

Patients and Study Design

The research lasted 18 months, the experimental group was 15 participants (12 were female, 3 were male), their mean age was 52. The experimental group (15 subjects) completed the research until the eighteenth month, the remaining part of the group (6 subjects) was excluded from the trial because it abandoned both the research and the therapeutic path of the outpatient center.

The subjects were selected by Galantara medical center team according to specific inclusion criteria: general medical history (subjects characteristics able to attend the group lessons, that the psychological conditions would have allowed, decided by the psychiatrist responsible for the structure), weight monitoring (by the dietician), medical certificate of sport fitness (it guarantees sports fitness and it is issued by a sports medicine specialist or general medical doctor) and binge eating diagnosis (by the psychiatrist responsible for the structure) (Ruocco 2017, Ministero della Salute 2013). The subjects were informed of the project and voluntarily joined by signing the informed consent.

The psychiatrist responsible for the structure has selected all the patients (with the inclusion criteria) who would join the project voluntarily and with an age of 18 and excluded minors deemed not yet suitable by the same to participate in the research. The participants must have experienced at least one year of group outpatient therapy and individual sessions before being admitted to the group dedicated to physical activity. They were mainly obese and suffer from various pathologies that add up to the eating disorder, furthermore they can be identified as extremely sedentary subjects with a rejection of physical activity, generally they did not take psychotropic drugs during the research (Gerlach et al. 2016).

Before participating in the research project the subjects carried out individual and group psychotherapy sessions. During the research the participants continued to carry out the psychotherapy sessions up to 12 months from the beginning of the research, continuing for the remaining 6 months to attend only the exercise lessons. The medical team considered the creation of a control group was not necessary in order to not exclude any patient from exercises practicing and to prevent the creation of complications among the participants in the psychotherapy groups already set up. In fact, subjects suffering from eating disorders see the body as an unknown object or an enemy, something not belonging to them. Therefore, the prescription of exercise has been calibrated to give space to a traumatized body to recover and to understand itself, without reducing the practice to a desperate

pursuit of weight loss, but to an essential activity, necessary both to the mental state and to the physical health (Davis et al. 1997, Selby et al. 2015).

Experimental Procedures

The selected patients were subjected to 4 tests (T0, T1, T2, T3). The tests investigate aspects of attention, visuo-motor and visuo-conceptual tracking and have been modified and combined with different motor protocols in order not to accustom the subject to compilation and to produce less subjective results possible in a long-term research period. The authors created and adapted the tests from internationally cognitive instrument used to assess both selective and sustained attention in a variety of clinical settings named "The d2 Test" and "Trail Making Test" (Bates and Lemay 2004, Casagrande et al. 2000, Bowie and Harvey 2006).

"Trail Making Test" or "TMT" is one of the most frequently used neuropsychological tests due to its ease of administration and sensitivity in detecting brain damage, it can be administered to people with attentional deficits from 15 years to over 70 (Amodio et al. 2002). Patients with emotional disorders tend to have a worse performance than emotionally stable people (Gass and Daniel 1990). In the TMT depression has the effect of slowing down the performance that interacts with the typical aging slow down, so much so that depressed elderly patients require more time to complete the testing of emotionally stable or depressed younger elderly subjects. "The d2-R" is the updated version of the test currently most used in Europe and the USA for the measurement of concentration skills, attention and speed of information processing. Specifically, it is a concentrated attention test, defined as the ability to maintain concentration during the selection of relevant stimuli or during a task that requires selective attention (Krumm et al. 2008). It applies in all those areas where it is important to detect the operation and integration of attention, concentration and speed (Steinborn et al. 2017). The tests, used and adapted, contain the following characteristics:

- Test T0 "Reading test" (associated with P1): the subject must find the errors present in the text, the maximum score is 30 errors, in a time equal to 3 and a half minutes.
- Test T1 "Dots" (associated with P2): the subject must connect dots to compose a figure representing an animal in the shortest time possible time.
- Test T2 "Finds the 20 differences" (associated with P3): it includes a facade in which there are two apparently identical images, however one contains 20 differences with compared to the other. The subject has to find as much differences as possible in a time defined by 3 and a half minutes.
- Test T3 "Compose the words" (associated with P4): The test comprises a set of letters inserted inside square composed of four lines and four columns. The composition of words is considered valid in all direction unless the same letter is not repeated in the same word. The letter to compose a word must be close to each other in order to draw an

imaginary line that crosses the same, all words are considered valid except proper names of people, things and places. The subject must perform the test by composing as many words as possible, according to the rules previously described in a time equal to 4 minutes.

Each test was submitted manually to patients before (T+ EX) and after the training session (EX+T). T0-T1-T2-T3 (EX+T) and T0-T1-T2-T3 (T+EX) were administered separately and therefore alternated weekly to have the same amount of data for both. The training lesson had a frequency of one session per week lasting one hour and a half. T0-T1-T2-T3 tests have been combined with P1-P2-P3-P4 protocols according to the achievement of the objectives of the motor protocols in a gradual manner, the subjects in question started from an absolutely sedentary lifestyle and it was necessary to achieve the objectives for all the protocols before proceeding to the next. The frequency, duration and type of the training protocols depended on the reaction of the subjects in their pathological and psychophysical individuality, the progresses achieved and the emotional state of the individual (Borino 2013, Zana 2014, Salvo et al. 2018).

- Protocol P1: breath learn as a form of relaxation and proprioception, distinguishing diaphragmatic or abdominal respiration from costal or thoracic (Cavaleri 2013, Cesarani and Alpini 1999, Giardini 2007); learn to diversify the stimuli from the various body districts, acquire the perception of the various body districts in space and time both in static and dynamic conditions; performing exercises aimed at muscle stretch, to flexibility and posture at low training intensity (Paillard 1992).
- Protocol P2: coordination improvement and decrease of muscle tension and fatigue by performing exercises deriving from Yoga and Pilates practice (Kendall et al. 2005, El Ghoch et al. 2013, Loudes 1980).
- Protocol P3: functional training preceded by the teaching of the proposed exercises; introduce cardiorespiratory exercises; perform complex exercises that involved multiarticular mobilization respecting the rhythm and breathing; recommend activities also in playful form as well with the inclusion of group games, of the basics of athletics, and volleyball (Barber et al. 2018, Bektaş 2019).
- Protocol P4: increase in strength, hypertrophy and muscular endurance through circuit training without overloads, in multiple series, high repetitions and with short breaks between medium intensity exercises (Carraro et al. 1998, Dingemans et al. 2017).

Statistical Method

The data were transcribed and collected manually in a database created with Microsoft Excel at the end of each training session. The Wilcoxon test (Divine et al. 2013) was conducted to examine the differences caused by the treatment in each study subject in the parameters of (EX +T) and (T+EX) in the domains of the T0, T1, T2, T3 tests. It was assessed between the beginning of the training session

and the final phase to analyze the trend of attention variables before and after the training session, Tables 1–5. In any analyses, $P < 0.05$ was considered statistically significant. The probability value for trends has been set at a level of $P < 0.05$.

Table 1. (a) Ranks T0

		N	Average rank	Sum of ranks
T0 (T+EX) - T0 (EX+T)	negative ranks	9 ^a	5.89	53.00
	positive ranks	1 ^b	2.00	2.00
	correlations	2 ^c		
	total	12		

a. $T0 (T+EX) < T0 (EX+T)$; b. $T0 (T+EX) > T0 (EX+T)$; c. $T0 (T+EX) = T0 (EX+T)$. Calculation, for each entity of the change, in the variable attention levels of T0 test data and rank all differences in relation to their absolute value. Sum of the ranks T0, in order to obtain the statistical test W.

Table 1. (b) Test^a Statistics T0

	T0 (T+EX) - T0 (EX+T)
Z	-2.608 ^b
Sign. asymptotic (two-tailed)	0.009
Sign. exact (two-tailed)	0.008
Sign. exact (one-tailed)	0.004
Point probability	0.003

a. Wilcoxon sign rank test; b. Based on positive ranks. Comparison with the value of W obtained with the distribution of the possible values of W and compared to the hypothesis $P < 0.05$.

Table 2. (a) Ranks T1

		N	Average rank	Sum of ranks
T1 (T+EX) - T1 (EX+T)	negative ranks	4 ^a	3.38	13.50
	positive ranks	1 ^b	1.50	1.50
	correlations	1 ^c		
	Total	6		

a. $T1 (T+EX) < T1 (EX+T)$; b. $T1 (T+EX) > T1 (EX+T)$; c. $T1 (T+EX) = T1 (EX+T)$. Calculation, for each entity of the change, in the variable attention levels of T1 test data and rank all differences in relation to their absolute value. Sum of the ranks T1, in order to obtain the statistical test W.

Table 2. (b) Test^a Statistics T1

	T1 (T+EX) - T1 (EX+T)
Z	-1.633 ^b
Sign. asymptotic (two-tailed)	0.102
Sign. exact (two-tailed)	0.188
Sign. exact (one-tailed)	0.094
Point probability	0.063

a. Wilcoxon sign rank test; b. Based on positive ranks. Comparison with the value of W obtained with the distribution of the possible values of W and compared to the hypothesis $P < 0.05$.

Table 3. (a) Ranks T2

		N	Average rank	Sum of ranks
T2 (T+EX) - T2 (EX+T)	negative ranks	7 ^a	4.07	28.50
	Positive ranks	1 ^b	7.50	7.50
	correlations	2 ^c		
	total	10		

a. $T2 (T+EX) < T2 (EX+T)$; b. $T2 (T+EX) > T2 (EX+T)$; c. $T2 (T+EX) = T2 (EX+T)$. Calculation, for each entity of the change, in the variable attention levels of T2 test data and rank all differences in relation to their absolute value. Sum of the ranks, T0 in order to obtain the statistical test W.

Table 3. (b) Test^a Statistics T2

	T2 (T+EX) - T2 (EX+T)
Z	-1.474 ^b
Sign. Asymptotic (two-tailed)	0.141
Sign. Exact (two-tailed)	0.164
Sign. Exact (one-tailed)	0.082
Point probability	0.016

a. Wilcoxon sign rank test; b. Based on positive ranks. Comparison with the value of W obtained with the distribution of the possible values of W and compared to the hypothesis $P < 0.05$.

Table 4. (a) Ranks T3

		N	Average rank	Sum of ranks
T3 (T+EX) - T3 (EX+T)	negative ranks	2 ^a	4.50	9.00
	positive ranks	4 ^b	3.00	12.00
	correlations	0 ^c		
	total	6		

a. $T3 (T+EX) < T3 (EX+T)$; b. $T3 (T+EX) > T3 (EX+T)$; c. $T3 (T+EX) = T3 (EX+T)$. Calculation, for each entity of the change, in the variable attention levels of T3 test data and rank all differences in relation to their absolute value. Sum of the ranks T3, in order to obtain the statistical test W.

Table 4. (b) Test^a Statistics T3

	T3 (T+EX) - T3 (EX+T)
Z	-0.314 ^b
Sign. Asymptotic (two-tailed)	0.753
Sign. Exact (two-tailed)	0.844
Sign. Exact (one-tailed)	0.422
Point probability	0.078

a. Wilcoxon sign rank test; b. Based on positive ranks. Comparison with the value of W obtained with the distribution of the possible values of W and compared to the hypothesis $P < 0.05$.

Table 5. (a) Ranks $T0 (EX+T)$ and $T1, T2, T3 (T+EX)$

		N	Average rank	Sum of ranks
$T0 (T+EX) - T0 (EX+T)$	negative ranks	9 ^a	5.89	53.00
	positive ranks	1 ^b	2.00	2.00
	correlations	2 ^c		
	total	12		
$T1 (EX-T) - T0 (EX+T)$	negative ranks	6 ^d	3.50	21.00
	positive ranks	0 ^e	0.00	0.00
	correlations	0 ^f		
	total	6		
$T2 (EX-T) - T0 (EX+T)$	negative ranks	7 ^g	4.00	28.00
	positive ranks	0 ^h	0.00	0.00
	correlations	0 ⁱ		
	total	7		
$T3 (EX-T) - T0 (EX+T)$	negative ranks	4 ^j	2.50	10.00
	positive ranks	0 ^k	0.00	0.00
	correlations	0 ^l		
	total	4		

a. $T0 (T+EX) < T0 (EX+T)$; b. $T0 (T+EX) > T0 (EX+T)$; c. $T0 (T+EX) = T0 (EX+T)$; d. $T1 (T+EX) < T0 (EX+T)$; e. $T1 (T+EX) > T0 (EX+T)$; f. $T1 (T+EX) = T0 (EX+T)$; g. $T2 (T+EX) < T0 (EX+T)$; h. $T2 (T+EX) > T0 (EX+T)$; i. $T2 (T+EX) = T0 (EX+T)$; j. $T3 (T+EX) < T0 (EX+T)$; k. $T3 (T+EX) > T0 (EX+T)$; l. $T3 (T+EX) = T0 (EX+T)$. Calculation, for each entity of the change, in the variable attention levels of $T0 (EX+T)$ and $T1-T2-T3 (T+EX)$ test data and rank all differences in relation to their absolute value. Sum of the ranks $T0 (EX+T)$ and $T1-T2-T3 (T+EX)$, in order to obtain the statistical test W.

Table 5. (b) Test^a Statistics $T0 (EX+T)$ and $T1, T2, T3 (T+EX)$

	$T0 (T+EX) - T0 (EX+T)$	$T1 (T+EX) - T0 (EX+T)$	$T2 (T+EX) - T0 (EX+T)$	$T3 (T+EX) - T0 (EX+T)$
Z	-2.608 ^b	-2.201 ^b	-2.366 ^b	-1.826 ^b
Sign. Asymptotic (two-tailed)	0.009	0.028	0.018	0.068
Sign. Exact (two-tailed)	0.008	0.031	0.016	0.125
Sign. Exact (one-tailed)	0.004	0.016	0.008	0.063
Point probability	0.003	0.016	0.008	0.063

a. Wilcoxon sign rank test; b. Based on positive ranks. Comparison with the value of W obtained with the distribution of the possible values of W and compared to the hypothesis $P < 0.05$.

Results

A total of 97 tests were performed at the end of the training session ($EX + T$) and 105 tests before the training session ($T+EX$). Patients received no special recommendations to avoid compromising results. The averages of the results of 4 different types of cognitive tests were reported ($T0, T1, T2, T3$). In table 6, extrapolated from the database created on Excel, the averages of the results were reported for each individual subject which have been identified with "n.1-15" to guarantee their privacy, divided by test, ($T0, T1, T2, T3$) according to the time of the execution: before training ($EX+T$) after training ($T+EX$). Absences have been

transcribed with a "-" symbol. Only the test averages belonging to T2 have been converted to decimals. Figures 1–4 show in graph the comparison of the results reported in Table 6, the graph belonging to Figure 5 shows the trend of the subjects who have participated at least three training sessions. Tables 7 show the results produced by the Wilcoxon test for each type of test. Tables 8 show the Wilcoxon test results in relation to T0 (T+EX) and T1, T2, T3 (EX+T).

Table 6. Differences in Average Cognitive Tests

Subjects	T0 (EX+T±T+EX)	T1 (EX+T±T+EX)	T2 (EX+T±T+EX)	T3 (EX+T±T+EX)
n.1	12±13.5	-	-	-
n.2	22.5±19.3	-	-	-
n.3	24.2±19	-	-	-
n.4	19.3±16.5	0.09±0.07	13.5±12	10±7
n.5	21±17	-	-	-
n.6	9.5±8	-	-	-
n.7	20.7±20.7	0.06±0.07	13.2±12	5.3±7
n.8	19±17	0.08±0.06	14.6±13.25	10±13.3
n.9	18.3±11	0.15±0.07	15±13.5	-
n.10	16±16	0.08±0.08	10.3±10	-
n.11	18.5±17	-	13±15	-
n.12	-	-	18±18	-
n.13	20±16.8	0.12±0.11	11.25±11.25	6±4
n.14	-	-	11±9	9.5±10.5
n.15	-	-	14±13	10.5±12

T0 (EX+T±T+EX) - first attention test (average of the administration test before the training session and after the training session); T1 (EX +T ±T+ EX) - second attention test (average of the test administration before the training session and after the training session); T2 (EX+T±T+EX) - third attentional test (average of the test administration before the training session and after the training session); T3 (EX+T±T+EX) - fourth attentional test (average of the test administration before the training session and after the training session); Abbreviations: T0 = first cognitive test; T1 = second cognitive test; T2 = first cognitive test; T3 = first cognitive test; EX+T = cognitive test done before physical activity T+EX =cognitive test done after physical activity.

Table 7. Results of Wilcoxon Signed Rank Test

Variable	n	Point Probability
T0 (T+EX) -T0 (EX+T)	12	<0.003*
T1 (T+EX) -T1 (EX+T)	6	0.063
T2 (T+EX) -T2 (EX+T)	10	0.016
T3 (T+EX) -T3 (EX+T)	6	0.078

*0.003 <0.05p; Abbreviations: T0 = first cognitive test; T1 = second cognitive test; T2 = first cognitive test; T3 = first cognitive test; (T+EX) = cognitive test done before physical activity (EX+T) = cognitive test done after physical activity.

Table 8. Results of Wilcoxon Signed Rank Test $T0$ ($T+EX$) Correlated to $T1$ - $T3$ ($EX+T$)

Variable	n	Point Probability
$T0$ ($T+EX$) - $T0$ ($EX+T$)	12	$<0.003^*$
$T1$ ($T+EX$) - $T0$ ($EX+T$)	6	$<0.016^{**}$
$T2$ ($T+EX$) - $T0$ ($EX+T$)	7	$<0.008^{***}$
$T3$ ($T+EX$) - $T0$ ($EX+T$)	4	0.063

*($0.003 < 0.05p$); **($0.016 < 0.05p$); ***($0.008 < 0.05p$). Each comparison is based on a different number of subjects.

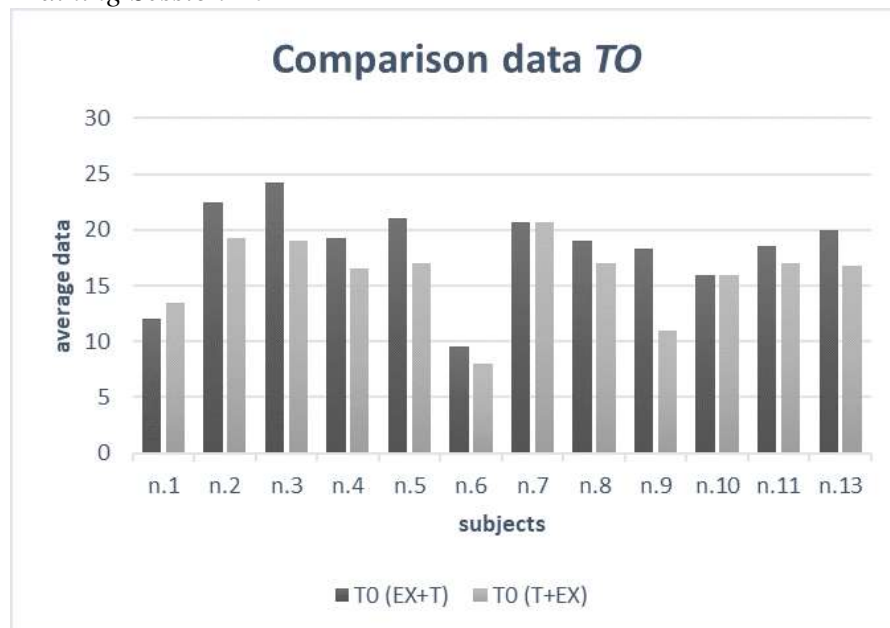
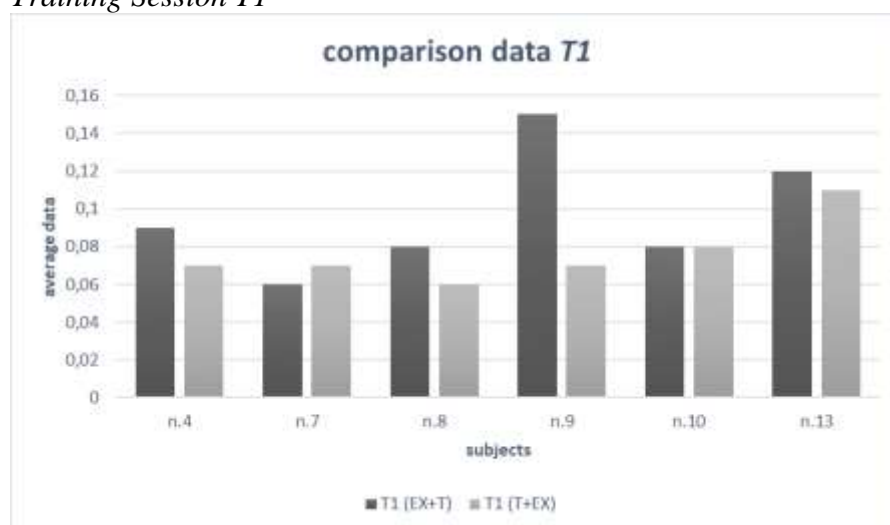
Figure 1. Trend of Attention Variables before ($T+EX$) and after ($EX+T$) the Training Session $T0$ **Figure 2.** Trend of Attention Variables before ($T+EX$) and after ($EX+T$) the Training Session $T1$ 

Figure 3. Trend of Attention Variables before ($T+EX$) and after ($EX+T$) the Training Session T2

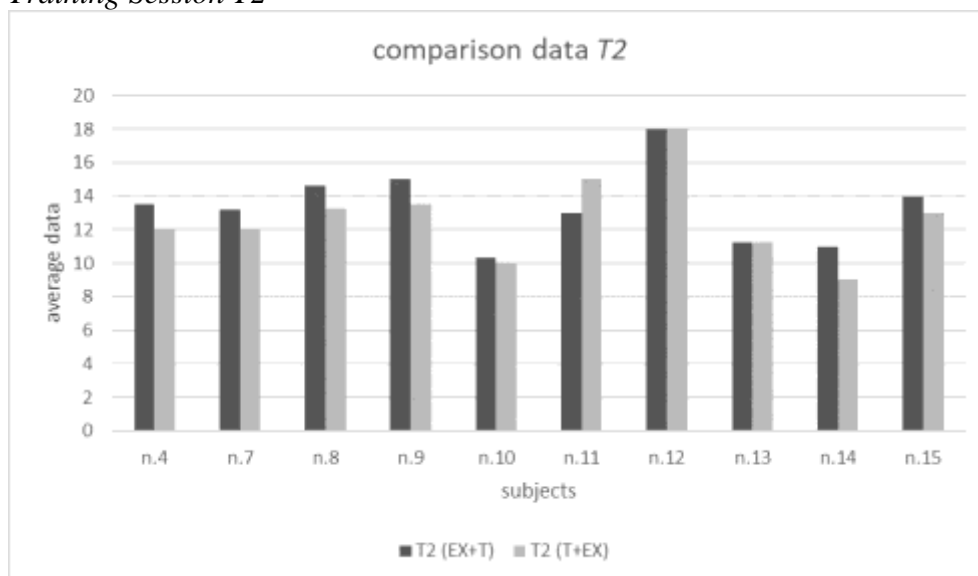


Figure 4. Trend of Attention Variables before ($T+EX$) and after ($EX+T$) the Training Session T3

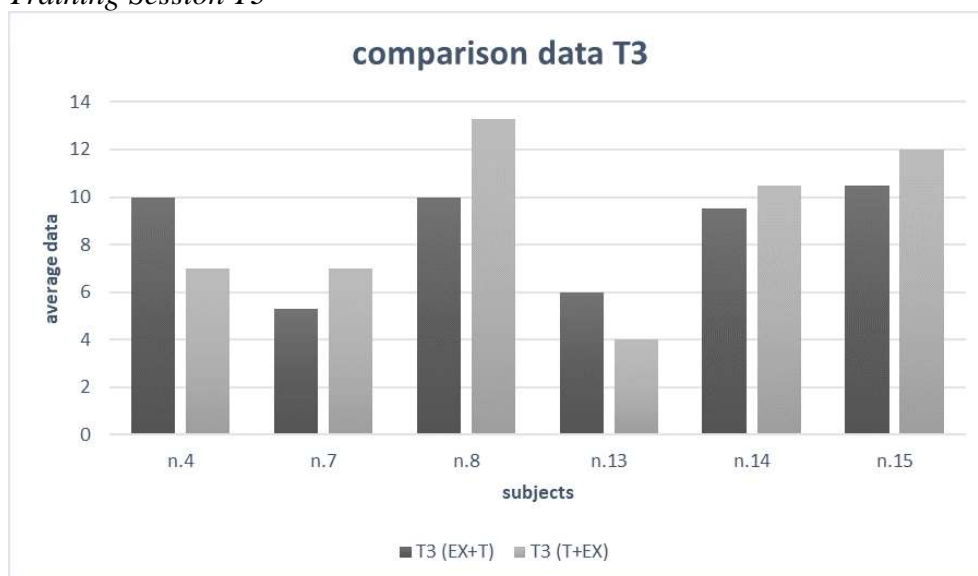
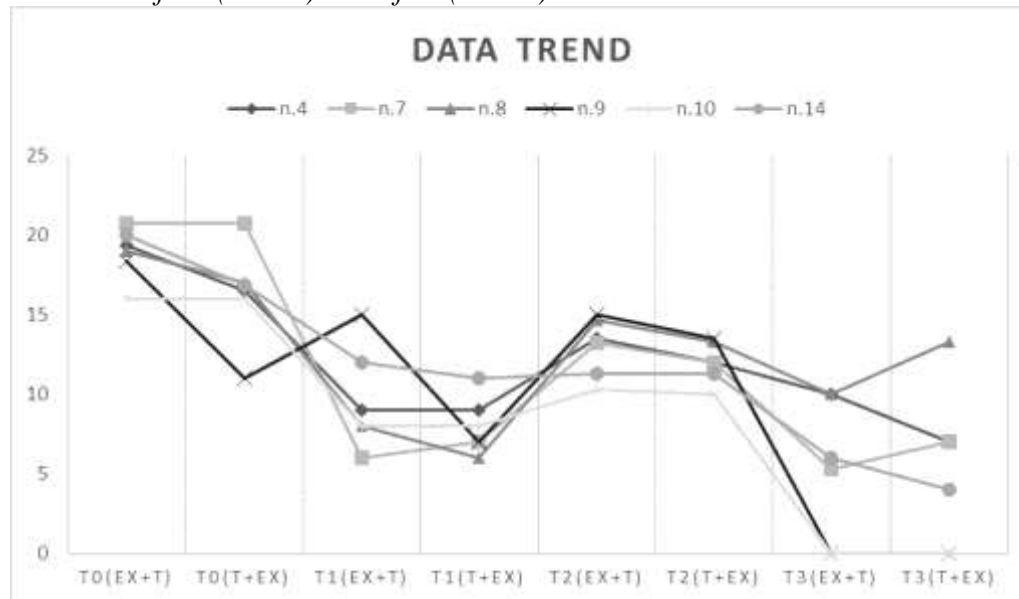


Figure 5. Trend of the Subjects who have Participated at Least Three Training Sessions before (T+EX) and after (EX+T) T0-T1-T2-T3



Discussion

The cognitive skills and attention improve through the performance of motor activities which may however not indicate a psychophysical condition necessarily positive to the different types of training. In the present study, low intensity training aimed at improving breathing and motor control is associated with excellent cognitive response and increased attention span (Colcombe and Kramer 2003).

The results divided by the 4 modules (T0, T1, T2, T3) have shown that the attention index, calculated by the variables (EX+T) and (T+EX), obtained through their combination with 4 different types of work protocols (P1, P2, P3, P4), change significantly depending on the type of training. The results of the T0 tests administered before (EX+T) and after the training session (T+EX) show that a statistically significant difference emerges (Table 6) (*0.003 < 0.05p) which identifies the training of the P1 protocol positively relevant to the increase cognitive abilities, even if it contains, in the final phase, a data break-even (Figure 1) of the results between T0 (EX+T) and T0 (T+EX) interpreted as an indicator of habit with respect to the specific type of test.

The results of tests T1, T2, T3 do not reveal a statistically significant difference between the variables (EX+T) and (T+EX). Taking into consideration the comparison which is based on a different number of subjects of T0 (T+EX) with T1 (EX+T), T2 (EX+T), T3 (EX+T) we can affirm that, among the 4 cases who participated at least four sessions, there was no statistically significant difference between T0 (T + EX) and T3 (EX + T). Differences emerge instead between T0 (T + EX) and T0 (EX + T), between T0 (T + EX) and T1 (EX + T) and between T0 (T + EX) and T2 (EX + T) which demonstrate an increase in

long-term cognitive activity produced by the constant execution of motor activity (Table 3) $*(0.003<0.05p)$ $** (0.016<0.05p)$ $*** (0.008<0.05p)$ (Figure 5). The heterogenic response to training has been linked to differences in the regulation of psychological factors, regarding the state of therapies, age, genetic and pathological factors (Hillman et al. 2006).

In our research, an increase in cognitive activity and attention span depending on the type of motor protocol occurred mainly during the sessions of the first working protocol used P1 and in the long term. On the contrary, the stasis in cognitive activity and the threshold of attention were more likely to be found in the exercise protocols that required greater muscle effort, therefore we suggest that the withdrawal from lessons of some group members and the fluctuating psychological conditions, regarding the performance for this specific disorder, have influenced the motivation and therefore the result produced by the motor activity of protocols P2, P3, P4. A more uniform assessment could be given using different tests to reach results less receptive to emotional states, ultimately making the data more objective with a larger sample number. The training sessions were carried out in a classroom equipped by the outpatient center and therefore in the absence of specific tools for motor activity, which certainly have contributed to make the lesson place welcoming but on the contrary, it has been not allow a more complete management of the exercise planning. The professional relationship with the subjects has been not always easy to manage the teaching in the various lessons, because of waivers or their sudden mood swings that have generated a customary number of drop-outs of motor practice (Linardon et al. Smith et al. 2018, Yager et al. 2014).

Conclusions

Despite the drop-out phenomenon by patients and their intermittent presence at the lessons, it can be stated that a long-term physical activity has a positive effect on the attention levels of patients with binge eating (Kramer et al. 1999) and the working protocol P1 is, for these patients, the therapy with greater quantitative and qualitative feedback. We believe motor activity could play a concrete role in the future as a constitutive tool in the treatment of binge eating through the creation of motor intervention protocols guaranteed in their effectiveness.

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Exploring the Role of Identity in Motivating Walking Netball Participants

By Claire Mulvenna^{*} & Anika Leslie-Walker[±]

This paper examines the experiences of participants (n = 12) on the England Netball, 'Walking Netball' (WN) programme. Previous research has sought to explore participant experiences on programmes similar to WN, suggesting greater social engagement and an increase in desire for life were positive consequences from participation. Semi structured interviews explored the motivations held for participation in the programme with regards to social identity and the affective consequence of participation. Four themes emerged from data analysis; (1) WN as a form of physical activity, (2) collaborative identity, (3) group inclusion, and (4) regulatory routine. Findings suggest that participants on England Netball's WN programme, are primarily motivated to continue attending WN by the collective identity they experience through being involved in the programme. Further research however on the construction of collective group identity is required to further enable project funders and deliverers in ensuring projects can effectively meet the motivations of their participants.

Keywords: Physical activity, identity, relatedness

Introduction

Physical Activity and Older Adults

The UK population has been gradually getting older and has been classed as an ageing population from the concluding half of the 20th Century, with this trend being anticipated to carry on in the future (Office for National Statistics 2018). Currently there are over 11.8 million residents in the UK who are aged 65 and over, representing over 18% of the UK population (Office for National Statistics 2018). As life expectancy has increased, the amount of time spent enduring poor health has also increased (Office for National Statistics 2018) with the likelihood of being disabled and/or experiencing multifaceted health conditions also increasing with age (Office for National Statistics 2018).

Participation in Physical Activity (PA) has been identified as being a contributing factor to older adult's regulation of health and in decreasing the occurrence of falls, diseases and disability (Haight et al. 2005, Mensink et al. 1999, Young and Dinan 2005). Alongside the physiological benefits for older adults gained from participating in PA, are the positive impacts participation in PA can have on psychological wellbeing. There is evidence to suggest that participation in PA can reduce anxiety, decrease social isolation, diminish the symptoms of

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depression and improve mental health amongst older adults (Bridle et al. 2012, Liu 2009, Netz et al. 2005, Scheerder et al. 2004, Windle 2014, Windle et al. 2010). Despite the benefits experienced from participating in PA, adult activity levels gradually drop with age (Hughes et al. 2008).

In the UK, Ukactive, a not-for-profit body comprised of members and partners from across the UK active lifestyle sector, suggest that 54% of people aged over 65 can be classified as "inactive", meaning they participate in only half an hour or less of moderate to vigorous PA a week (Ukactive 2017). Meanwhile the British Heart Foundation (2017) suggest that just over 10% of men and women aged 50+ participate in a sport or PA at least once a week (British Heart Foundation 2017), demonstrating that the PA levels of over 50's are the lowest of all age groups over the age of 18. Research shows that fewer women achieve the recommended participation levels than men (Berger et al. 2005, Hughes et al. 2008). Meanwhile women who participate in PA do so for a variety of reasons including "ill-health prevention, health and mobility maintenance, health problems and scares, doctor referrals" (Carmichael et al. 2014, p. 15) as well as social interaction (Arkenford 2006, Carmichael et al. 2014).

Improving and increasing levels of participation in PA to meet current guidelines is a public health priority and PA recommendations need to be designed by public health professionals and organizations in order to try to address the issues associated with an aging population (WHO 2013). With this in mind programmes such as Walking Netball (hence forth will be referred to as WN), Walking Football (The FA 2020) and Walking Basketball (Basketball England 2020) have been developed with the objective of engaging older adults into PA. The evolution of walking sports has been established to promote and cater for older adults' participation in sport and PA, to support re-engagement and to attain to intensity and competitive levels (Aiello 2016).

Walking Netball

England Netball, the National Governing Body for netball in England, developed WN with the aim of creating open and accessible forms of netball. WN was designed so that anyone wishing to play netball can regardless of age or fitness level (England Netball 2015a) and in 2018 WN celebrated having over 100,000 individuals registered to participate (England Netball 2018). WN aims to target those that have played netball previously and dropped out due to injury, those who may have not played since school and those looking to re-engage in PA. Discussing the benefits of participating in WN, England Netball highlight physical benefits such as "lower heart rate and blood pressure, less fat and more muscle, and better mobility" (England Netball 2015b). England Netball also acknowledges the social benefits, stating attendance at WN sessions can lead to participants "avoid[ing] becoming isolated and interact[ing] with individuals and small groups" (England Netball 2015b). WN can therefore be seen to address the PA motivations of women by allowing a physically active lifestyle to be pursued alongside developing social interaction. There are three key rule adaptations to WN in comparison to the traditional game of 7-a-side netball. These adaptations are

provided to ensure players are walking throughout the game, to reduce the impact on landings, improve the momentum of the match and encourage improved decision making within the game (England Netball 2015c). With the objective of the WN programme being to offer an open and accessible form of netball to older women and participants less physically active, there is an opportunity to carry out research utilizing the project to assess the motivations of those participating in WN. By investigating the motivations of the participants who engage in WN sessions, assessments can be made as to the determinants of older women's engagement in PA. As such the aims of this study were to identify the primary motivations held for older women to attend WN sessions, identifying the motivational profiles of participants and secondly to explore the ways in which WN sessions affected participant's motivation to engage in continued PA. Within this study primary motivations were classed as the principle reasons the participants chose to start attending and participating in WN, while the continuing motivations were classified as the reasons the participants sustained attendance at WN sessions. As such the different motivations of participants could be categorised as to what the trigger was to the participants starting to attend WN sessions and what the continued reasons for their attendance was, recognising any changes in motivations.

Theoretical Framework

Motivational theories can be employed to provide a framework to comprehend the circumstances and conditions that lead to positive or negative sport experiences (Hagger and Chatzisarantis 2007). As such the identification of an individual's motivation can lead to the development of understanding the determinants of an individual's involvement in PA (Deci and Ryan 1991). Self Determination Theory (SDT) is a motivational theory that recognises there are three universal, innate and psychological needs: relatedness, competence and autonomy (Deci and Ryan 2012). SDT has been applied to a wide variety of contexts, including PA to investigate and identify the "why" of behaviour. Relatedness is acknowledged to be the universal desire to be a part of caring relationships with others, developed through cooperation with others (Deci and Ryan 2012). Within PA relatedness can be described as being the sense of belonging that is experienced through being a part of a team or society and the connection that is experienced when engaging in shared experiences with others (Vallerand and Losier 1999). Competence is recognised as the aspiration of individuals, to effectively interact with their environment, in order to achieve anticipated outcomes (Deci and Ryan 2012). Competence permits an individual to believe that they can thrive and experience the successful completion of tasks, in a specific environment or situations. Within a PA context competence is seen as being crucial to the expression of motivation (Reinboth and Duda 2006). Finally, autonomy is the widespread urge for an individual to be in control of the course of their own life (Deci and Ryan 2012). The essential principle of SDT indicates that humans are profoundly motivated by activities which allow them to satisfy the

three needs of competence, autonomy and psychological relatedness (Deci and Ryan 2012).

The SDT framework offers the understanding that an individual's motivations within a specific context can be on a spectrum across intrinsic motivation, extrinsic motivation and amotivation (Deci and Ryan 1985, 2000, 2012, Vallerand 1997). Intrinsically motivated individuals engage in specific activities for the enjoyment of participating, as well as the satisfaction of learning from participating (Deci and Ryan 1985). In contrast extrinsic motivation is created by exterior sources, such as participating in activities for social approval and trophies (Deci and Ryan 1985). Meanwhile amotivation is the belief of having a lack of intent to engage in a particular behaviour.

Intrinsic motivation is classified as being more self-determined whilst experiencing extrinsic motivation offers the least self-determined form of motivation. Self-determination is connected to increased psychological performance and as such a corresponding pattern of consequences can be foreseen (Deci and Ryan 2000). This means that the most positive outcomes taken from participation in PA (e.g. feelings of satisfaction and positive emotions,) should be a product of motivation of the most self-determined form, while in contrast the most negative outcomes from sports participation (e.g. anxiety, lack of determination) should be a result of motivation that is the least self-determined. Vallerand and Losier (1999, p. 144) state that "the reasons for doing an activity are generally perceived as indicative of the person's motivation toward a given activity". As such SDT was utilized within this study as a theoretical framework to investigate the motivations held by participants on the England Netball "Walking Netball" programme in light of the way in which participation at WN sessions contributed to the relatedness, competence and autonomy of participants.

Methodology

A key informant (England Netball Regional Development Officer) was initially approached to discuss the study and engagement of WN participants. The key informant identified a WN session in the Greater Manchester area that engaged 20+ participants each week and had been established for over 18 months. The session that was identified for data collection was a weekly session coordinated by two WN volunteer "hosts", it took place on a Tuesday 12.30–13.30 and was free to attend. The key informant introduced the lead author to the two volunteer "hosts". The 'hosts' then facilitated the researchers attending a WN session to meet the participants, discuss the research and invite the WN participants to volunteer to be a part of the research. Participants from the WN session were invited to be a part of the study if they were female, aged 50+ and had attended the WN session for a minimum of 6 months. This process and selection criteria allowed 12 participants to be recruited for the study from one WN session (see Table 1). For the purpose of this study an individual was defined as being older if they were over the age of 50, this follows the guidance of Khan

(2009) and has been used in previous research to investigate the participation of older women in sport (Carmichael et al. 2014).

Table 1. *Participant Information*

Name	Age	Experience of WN
Participant 1	50	24 months
Participant 2	72	18 months
Participant 3	50	12 months
Participant 4	61	14 months
Participant 5	65	18 months
Participant 6	64	13 months
Participant 7	61	24 months
Participant 8	54	17 months
Participant 9	58	14 months
Participant 10	70	16 months
Participant 11	67	22 months
Participant 12	61	18 months

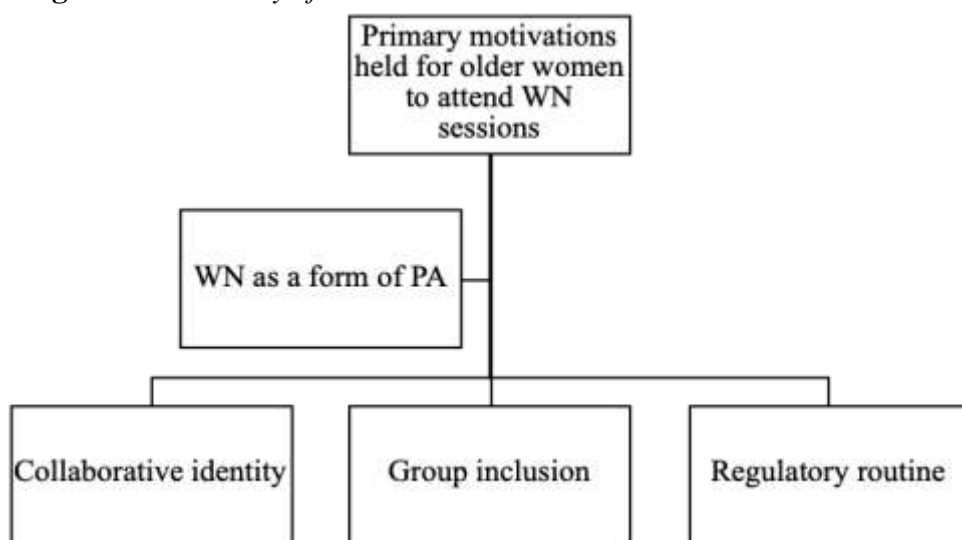
A qualitative method was used within this study to allow the experiences and in particular the motivations of WN participants to be analyzed. A provisional semi-structured interview guide was informed by SDT and focused upon the key areas; history of PA participation, experience with WN and the social factors experienced through participating in PA and WN. A semi structured interview was used as the data collection tool, to allow the interviewer to adopt a flexible approach to data collection, by adding probing questions in response to the interviewee's answers (Jones 2015). The interview guide was piloted on three recreational netball players who did not participate in WN and as such the results were not used within this study. Minor edits were made to the interview schedule in terms of the order of the questions, to ensure the narrative of the guide was consistent. Institutional ethical approval was gained from the ethical approval board and all participants in the study were provided with an information sheet about the study prior to data collection and asked to provide informed consent.

The interviews were conducted individually by the authors in a quiet location, at the same site on which the WN session took place and lasted between 32 and 48 minutes (M – 42 minutes). All participants were provided with a pseudonym (e.g. Participant 1) in the transcription stage and within the results section only this pseudonym is used.

The data collected from the semi structured interviews was analyzed using the six stages of thematic analysis as suggested by Braun and Clarke (2006). Following transcription of the interviews, the lead author read and re-read the transcribed data to familiarize themselves with the data and consider initial codes. The transcripts were then all coded line by line and these codes were then arranged into categories to expose underlying ideas and assumptions. The categories that had been generated were then re-examined and reviewed in line with the raw data and the themes were then finally titled. Four themes were identified, the four main themes that emerged from data analysis were; (1) WN as a form of PA (e.g. participants were conscious of the physical benefits of attending WN and

participating in PA) (2) Collaborative identity (e.g. participants attended WN sessions for the collective identity of being a part of a specific group with a single identity), (3) Group inclusion (e.g. a purposeful effort was made to include participants from their first week attending), (4) Regulatory routine (e.g. WN was an integral part of the participants weekly routine). A hierarchy of themes can be seen in Diagram 1 with "WN as a form of PA" identified as the principle theme in this research in drawing participants to engage in WN. The remaining three themes acted as continued motivational factors for participants and were developed during the participants attendance at WN sessions.

Diagram 2. *Hierarchy of Themes*



Results

Participants in the study were aged from 50 to 72 (M – 61) and had an average of 17.5 months (range = 12–24 months) participating in WN.

WN as Form of PA

The reason identified by WN participants to begin attending WN sessions, was the feeling of need associated with having to do exercise and PA because of the physical benefits of participation in terms of managing ill-health. While the need to exercise, was discussed by the participants in this study as a motivating factor in them starting to attend the WN sessions, WN sessions were selected as the type of PA because the participants held a clear passion for netball. Participant 2 explained this balance of need to participate in PA and passion for netball when discussing the motivation she had for starting to attend and continuing to attend the weekly WN sessions. Participant 2 stated her attendance "is a lot to do with [the] guilt of needing more exercise when you are older and a lot to do with netball really". Participant 2's discussion that she attended WN session because of the guilt she felt due to the amount of exercise she did was balanced by the appeal of

reengaging in netball, a sport she had participated in as a child at school. Participant 2 spoke about the appeal of WN that allowed her to address the guilt she felt for having low activity levels. Participant 2 said "When I retired, because you have been fit at one time you are always thinking I should be doing something, I should be doing something. I saw it [WN] and thought oh I could do that, you know I don't think I was doing enough exercise, I have put on quite a bit of weight, so that was how I got into it". This need to exercise was highlighted by all the participants in this study who recognised they had the realization before starting to attend WN sessions that they needed to become more active. This realization was triggered by the knowledge of the physical and mental benefits experienced by participating in PA in older age. Participant 6 summarized the benefits experienced by engaging in PA by stating "You've got to keep moving otherwise you would seize up!" This attitude exemplified discussions by the participants in this study who were aware of the need to engage in PA and the associated benefits of participating in PA.

Engaging specifically in netball as a form of PA however was clearly a major draw to the participants, with several discussing that it was engaging in PA through netball in particular that motivated attendance. Participant 7 stated, "Now my kids are older, I have the time to commit to the sport I've always loved and cherished". Furthermore, Participant 1 stated that she specifically missed participating in netball when she was unable to do so and whilst the challenge of becoming inactive had impacted her life in many ways, the lack of participation in netball was increasing difficult. Participant 1 said "Just about 2 years before Christmas I wanted to come back and play netball, I have had both my knees replaced. I lost my job and changed my career path kind of. I am over that bit kind of, but I never really got over not playing netball". As such WN allowed Participant 1 to participate in low impact PA, but principally was appealing because it allowed her to play netball again, a sport from which her knee replacements had not allowed her to participate in.

The consequence of being aware of the need to participate in PA and being able to do so by engaging in WN meant the participants were incredibly proud of their newfound activity levels. Participant 4 discussed her pride in the activity levels she has reached since engaging in WN. Participant 4 said

I just love it [WN], I am buzzing on a Tuesday [Day of WN session]. I think it is a complete package... You know but it is getting me moving more which is important, like I say I am fitter than I have ever been. I have got to 61 and who would have thought I'd be playing netball and going to gym three times a week!

Participant 4 suggests here that the consequence of attending WN sessions and increasing her PA level is significant and contributes to her continued attendance at WN sessions and her engagement in other PA. The recognition of the need to engage in PA and the consequence of attendance at WN sessions, contributing to an increase in PA levels is important. This suggests that participants in WN are aware of the benefit of engaging in PA and the need to participate in PA, but that they will not choose to attend PA sessions only for the physical and mental benefits of participating. Instead, the participants in this study highlighted

they were motivated to continue to attend WN sessions for reasons other than increasing PA levels, such as community engagement and personal nostalgic experiences with netball.

Collaborative Identity

The second theme identifies the primary reason participants within this study continued to attend WN sessions. This theme focuses on the collaborative identity developed by being a part of a WN session. The development of a collaborative identity shared by WN participants, was a key motivating factor to individuals continuing to attend WN sessions after their initial engagement. This motivational factor was exemplified by Participant 9 who discussed the togetherness that was expressed by all the participants being friendly and inclusive. Participant 9 stated the key reasons for her attending were "Playing the netball, seeing the girls. It is a lovely crowd, this lot. We all get on really well". The emphasis on social relationships was clearly a key part of the experience of attending the WN sessions and led to the development of a collaborative identity of being a "Walking Netballer", a title that all the participants in this study embraced. Similar to Participant 9, Participant 6 recognised the social relationships that contributed to the development of a collaborative identity. Participant 6 commented "It is a really nice group, even when we are playing, we are clapping the team that scored, we are very encouraging. It is a laugh. It is the same faces because we have been coming a while. There is a lot of banter, cheeky banter, we just get on really well". The concept of "cheeky banter" and the focus on the sessions being "a laugh", added to the facilitation of a collaborative identity and suggests that a key part of the session is the element of fun and enjoyment which in turn encourages social interaction and the development of a collaborative identity. The concept of humour being critical to the development of a collaborative identity via the delivery of WN sessions was also discussed by Participant 3. Participant 3 stated "I think it is because it is such a friendly bunch, the coaches, [Coach 1] and [Coach 2] are brilliant. Everyone just has a laugh. It is amazing. It is a good laugh; everyone is a good friendly bunch." The emphasis on the relaxed, inclusive nature of sessions suggests a focus by coaches on making sessions open and inclusive, the result of which is the development of a collaborative identity by participants.

The participants discussed how the development of a collaborative identity motivated them to attend, by allowing the WN session to be more appealing than participating in other activities. Participant 8 discussed how the PA she participated in, included both attending the gym and also participating in WN sessions, but that WN sessions were far more appealing than the gym due to the inclusion she feels. Participant 8 stated she started attending WN sessions and it quickly became part of her routine. Participant 8 said "I just got back in to [netball], it was as if it was last week that I had played, and everyone is just so nice. They are really a nice bunch here". Participant 8 continued "I never want to go to the gym but always make myself go. Whereas I want to come here. When they tell me there is none, I am gutted. Going to the gym is routine but here, I want to be here". The idea of wanting to attend the WN sessions and experiencing a

positive environment which led to the development of a group identity was discussed by all participants in this research. The clear motivation for participants was the emphasis on social interaction and as such this made the session attractive and meant that the participants were motivated to attend. Participant 5 discussed the idea of social interaction and how this motivated her to attend by stating her reason for attending WN sessions was "It is meeting up with nice people and friends and stuff. Nobody is better than anyone [at WN sessions], nobody makes you feel rubbish [at WN sessions]. It is real good fun, nice people. [I] Can't wait for Tuesdays!" Meanwhile Participant 10 stated her motivation much more succinctly stating "It [WN sessions] is really social, it is a really nice group". The clear focus on social interaction and subsequent development of a collaborative identity was vital in motivating participants to continue to attend WN sessions after their initial attendance. The primary motivation for all participants interviewed in this research to continue attending WN, was the collaborative identity experienced because of the focus in sessions to encourage social interaction. This finding is significant as it suggests that projects aiming to engage women over 50 in low intensity activity and PA, should ensure sessions include a social element and encourage social interaction which then has the potential to lead to the development of a collaborative identity of participants.

Group Inclusion

The third higher order theme was group inclusion which focused on the role that the participants in WN sessions played to develop a collaborative identity. These actions included welcoming new members and ensuring an inclusive environment at WN sessions through encouragement and reassurance of fellow participants. Participant 11 discussed the actions she always tried to take when a new participant started at WN. Participant 11 discussed how this welcome was habit and an unspoken rule to include a new participant. Participant 11 stated that when a participant arrives at a WN session and they have never attended before, effort is made to find out about them and their background. Participant 11 stated the focus is on quickly "Getting to know their name, if they have played [netball] before, where they played, when they last played". This simple process welcomed new participants and attempted to ensure that an individual's first encounter at a WN session was positive. Participant 2 emphasized how she had been made to feel welcome at her first session by someone taking time to specifically welcome her to the group. Participant 2 stated, "They are all lovely ladies, [that player] over there, [playing] wing defence, was friendly and nice at my first session and then you get to know them and just go from there". Participant 2 emphasized that this welcoming atmosphere was continued and her ongoing participation in WN sessions, was due to the friendly nature of the participants and volunteers. Participant 2 stated, "It is a lot to do with how friendly the ladies are". Whilst welcoming a new member and including them in the group was important, continued effort was made to include everyone and make sure that the environment and sessions were all-encompassing.

In order to continue to make sessions inclusive and encourage group inclusion various specific efforts and adaptations were made. A flexible approach when umpiring was highlighted, as being crucial to ensuring all participants felt included in WN sessions and activities/matches within the sessions. Participant 1 discussed how at times when she took on the role of umpire, she tried to be more flexible in order to make the games inclusive and allow all group members to develop. Participant 1 stated "The other thing is the rules, pulling them up nicely. Like for me there [Points to match taking place in session] [She] was too close and so you just pull them up nicely. You've got to be flexible". This form of adaptable umpiring allowed participants who had not played netball since their physical education classes in school, to get back up speed with the rules of the game in an inclusive environment. The use of flexible rules and the unspoken welcoming ritual to include new members, led to the development of a group that was very inclusive and whose communication and interaction occurred not only during WN sessions.

The WN participants interviewed in this study keenly discussed how they were included in the WN session from their very first session and how this has led to them participating in social activities, as a WN group outside of WN sessions. Participant 4 discussed how the group was inclusive and how there was an annual Christmas dinner organized by WN participants. Participant 4 said "Odd ones [WN participants] that I probably couldn't tell you the name, but everybody chats to each other. It is not like little cliques and we all went out at Christmas to the [restaurant] across the road, which was really nice, we just had our lunch". This use of informal social gatherings further developed the group inclusion of the WN participants. The group inclusion was such that a number of the WN participants arranged to regularly participate in other PA sessions and non-PA sessions together. Participant 7 stated "There are a few of us who go to the gym together and I go to a choir and there are quite a few people who now go to choir. It is like a little community". The WN participants in this study discussed how the group inclusion began and led to the development of a community. This started with the welcome from participants to new participants and while this welcome was warm and inclusive it was interestingly unplanned and WN participant lead. This finding is significant as it shows the ownership WN participants take in order to make the WN sessions inclusive and in particular to make new participants feel welcome. This group inclusion is then further developed through flexible umpiring and social events held outside of the weekly WN sessions. This is significant for organizations setting up and coordinating projects aiming to engage women over the age of 50 as it suggests, women over 50 are keen to develop group inclusion. It also suggests to organizations that women over 50 are happy to take on unofficial roles that allow new participants to feel welcomed to sessions and allow participants to meet up and engage in social and PA sessions outside of the formal coordinated WN sessions.

Regulatory Routine

The final theme that was identified recognised the way in which the WN session had become a part of the participants weekly routine. The participants in

this study all discussed the way attending WN sessions had become a part of their week and very little would change this routine. Participant 12 discussed how she had to manage her working arrangements around WN sessions, however she expressed that it was now part of her routine. Participant 12 said "It is part of Tuesday now. I play netball and then I go to work". This organisation and structuring of her working week to allow her to remain engaged in WN, displays Participant 12 is an individual who is highly motivated to participate and keen to attend WN sessions. Participant 6 also expressed the way she looked forward to WN sessions and how they have become a part of her routine. Participant 6 stated "It is friends, you know, if I wasn't doing this I might be at home doing housework. It is something to look forward to each week". This finding is important as it displays the way regular participants at WN embed WN sessions in their weekly schedule and commit to attending each week where possible.

The participants in this study described their feelings of frustration if sessions were cancelled, acknowledging that the sessions were part of their routine and they thrived on engaging in WN on a weekly basis. Participant 4 stated "I feel cheated if I don't go [to WN sessions]. I am fitter now than I have ever been. I feel cheated because last week they cancelled the netball and I was gutted because I love coming here on a Tuesday. It is part of my life now. I absolutely love coming". The disappointment described by Participant 4 is important as it represents the feelings of participants when the opportunity to engage in WN sessions is taken away. This is significant for organizations that coordinate WN sessions, cancelling sessions can lead to feelings of resentment and frustration.

The participants acknowledged that it was not always possible to attend the WN sessions, although they only allowed one off events to make them unable to attend WN sessions. Participant 4 stated

I do [try and come every week] unless there is something, there was one week before in November where my daughters wanted me and them to have a day out and one of my daughters has every Tuesday off and she had no holidays so we had to go on a Tuesday [When WN session was on]. But very little else will stop me coming. There was another week where somebody had bumped my car and it had to go into repair. Otherwise I am here. Nothing will stop me.

This eagerness to participate and frustration when WN sessions were cancelled acknowledged the role WN sessions play in the participant's weekly routine. The sessions have become embedded in the participant's weekly schedule and now form a habitual part of their week. The participants recognised if they missed a session, they felt physically deflated. Participant 1 discussed her feelings when she could not attend. Participant 1 said "After netball I always feel better. If I miss it, I just feel a bit meh [unhappy]". Similarly, Participant 2 discussed at times needing to give herself a pep talk before she attends, but always feeling good that she has attended WN sessions. Participant 2 stated "I feel really good that I have come. I nearly didn't come today but then I think "oh for goodness sake". I always feel better when I have done it". This finding is significant as it suggests that the participants in WN are committed to attending WN and have embedded WN as part of their weekly routine.

Discussion

The aim of this study was to identify the primary motivation held by older women attending WN sessions, identifying and interpreting the motivational profiles of these participants. The second aim was to explore the ways in which WN sessions affected participant's motivation to engage in PA. The participants discussed that the motivation for them starting to attend WN was an aspiration to become more physically active. Meanwhile the main reason identified by WN participants for continuing to attend WN sessions was the collaborative identity that was developed through the social interaction experienced with other WN participants whilst at WN sessions. This finding separates this research from previous work (e.g. Carmichael et al. 2014) focusing on the motivations of older women in PA because of the breakdown of motivations in to initial and continuing, which provides a detailed analysis of how the motivations of older women can and do change as they participate in PA. The participants in this study displayed self-determined motivation profiles with participants motivated by relatedness, which can be identified as the sense of belonging experienced by being a part of a group and the connection experienced when engaging in shared experiences with others (Vallerand and Losier 1999). Self-determination profiles were also displayed by way in which the participants in this study discussed their motivation to attend WN session being focused on the development of autonomy related to PA participation. The WN participants in this study reported limited extrinsic types of motivation but did discuss the positive impact, that attending WN sessions had had on their health and their personal engagement with PA.

In relation to self-determination theory, the motivation to participate because of a common social identity aligns to Ryan and Deci (2003) proposal that the development of identities is done in order to satisfy the three basic psychological needs for competence, autonomy and relatedness. As such through the development of a common collaborative identity of being a "Walking Netballer" the participants in this study further enhanced their intrinsic motivation to participate in WN sessions. This aligns to the overall motivational profile of the participants in this study to engage in WN sessions, being self-determined with participants acknowledging their motivation focused on intrinsic factors. This is significant as research suggests the form in which an individual's motivation takes can predict the individual's commitment and attendance to a particular sport or activity (Ryan et al. 1997, Vallerand and Rousseau 2001). This is due to individuals who are more intrinsically motivated, displaying greater attendance and adherence to activities, in respect of self-determination being linked with heightened psychological performance.

The older women in this study were initially motivated to attend WN by the need to participate in PA because of the benefits of regular PA participation in contributing to a healthy lifestyle and as such the role PA has in contributing towards avoiding ill-health. This is significant as it suggests older women are aware of the benefits that participation in PA has on their health and that this can stimulate them to attend PA sessions. Similar to this study previous research has suggested older women participate in PA for multiple reasons including as a

preventative measure to ill-health (Carmichael et al. 2014) as well as to increase occurrences of social interaction (Arkenford 2006, Carmichael et al. 2014). However, previous research has failed to distinguish between the primary and continued motivations for participation, identifying instead general motivations for engaging in PA. As such, this paper offers unique insight in to the reasons why older women begin to attend PA sessions and how their motivation to participate in PA changes as they maintain participation in PA. Interestingly, although Carmichael et al. (2014) identified the role that friends and partners could play in motivating individuals to participate in PA, these motivating factors were not discussed by the participants in this study signifying another difference between this paper and the research carried out by Carmichael et al. (2014). This difference may be explained as the participants in the Carmichael et al. (2014) study were a sample of older women who did not participate in a weekly PA session focused on one team sport but instead participated in different types of PA. This could be taken to show that the interviewees in this study reflected a more common experience of PA than the participants in the Carmichael et al. (2014) study. Morris et al. (1995) identified the different motivations of participants in five types of PA activity (team sports, individual sports, racquet sports, exercise activities and martial arts) presenting results that suggested participants in team sports were distinguished from all the other participants by presenting higher scores on the social or affiliation sub-scale of the Participation Motivation Questionnaire (Gill et al. 1983). As such it is important to acknowledge that the results from this study are limited only to the experiences of the older women participating in a PA session focused on a team sport and not a PA session such as swimming, jogging or gym classes. Despite this, the findings offer clear practical implications and recommendations for further research into older women and participation in PA. However, it is important to acknowledge the limitations of this study. The data collection tool selected for this study only used interviews and as such a mixed method approach including participant observation and wider quantitative data collection using a tool such as The Sport Motivation Scale (Pelletier et al. 1995) or Participation Motivation Questionnaire (Gill et al. 1983) to collect data from multiple WN sessions, could offer greater insight in to the motivation of older women participating in WN sessions. This would allow a more complete picture of the experiences of WN participants to be presented.

Conclusion

In conclusion the findings of this study further enhance the research into motivation and older adult's participation in PA. The findings have clear implications for organizations funding and coordinating projects aimed at encouraging participation of older adults in PA. With the key practical implication being to ensure projects aimed at engaging older women in PA make sure they allow time for the social interaction of participants, which in turn will allow for the development of a collaborative identity. Project coordinators and funders also need to be aware of the initial motivation held by participants in WN that focus on the

need to engage in PA for the associated physiological and psychological benefits. This motivation is linked to the need to experience the health benefits available from PA participation, which would potentially allow participants to manage their health more completely than if they were inactive. As such project funders should be aware of participant's primary and continuing motivations and consider them when planning activities aimed at increasing PA levels in older women and when attempting to ensure the sustainability of projects. Developing a project that incorporates such recommendations is imperative to engaging older women in PA in order to address sedentary behaviour, degenerative diseases and social isolation. Alongside increasing PA levels of older women, such projects can begin to address the financial implications for organizations such as the National Health Service in the UK in regard to an aging population. Through the development of projects such as WN it is proposed that the decline in PA levels seen with age may begin to be addressed and the associated benefits of PA such as reduced falls, diseases and disability as well as increased psychological wellbeing can be experienced by an aging population. These benefits could potentially lead to less monetary spend on treatment and rehabilitation of some age related diseases and disabilities.

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