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Understanding complexity and dynamics in the career development of eSports athletes
Abstract

With the accelerated growth of the esports industry over the last few years, there has been a corresponding increase in the number of esports athletes. Yet there is limited research examining these athletes’ professional career journeys. This study provides a novel investigation into their career development process. This qualitative study uses a sample of 35 esports athletes from 16 professional esports clubs in China. Findings from semi-structured interviews confirmed our proposition that traditional career theories may be inadequate to capture the complex and dynamic nature of the newly emerged careers within esports. The authors propose that Chaos Theory in Careers (CTC) provides principles that may more effectively describe and explain the nature and main characteristics of esports careers, compared to the more conventional linear or stage-based sports career theories. This study makes a significant theoretical contribution through developing esports career theory which is applicable to a contemporary setting and has practical implications to practitioners for esports talent identification, recruitment and development.

KEYWORDS

Esports Athletes, Sports Development, Career Development, Chaos Theory in Careers, Emerging Careers
1 Introduction

The world of professional esports has grown rapidly over the last few years and is expected to reach US$200.8 billion in value and an estimated global audience of 351 million people by 2023 (Newzoo, 2020). Despite its increasing economic and social importance, research on esports is still in its infancy, and relatively little has been written about the labor force at the center of the esports industry, i.e. the athletes involved in the games. With the accelerated growth of esports, there has been a corresponding growth in the number of esports athletes, and esports continues to gain popularity as a career option particularly among young people (Kocadağ, 2019; Salo, 2017). Yet there is limited research examining the playing of esports as a career as opposed to a pure leisure activity (Bányai et al, 2018). A void exists in terms of knowledge on career development and progression in esports; it remains unknown how individuals initiate their involvement in esports activities, their journey towards becoming professionals, as well as the challenges and opportunities they face during their career development. This study addresses this unmapped knowledge gap by proposing a framework for the career development of esports athletes. It not only provides an initial analysis of the esports athletes’ transitional path to success, but also explores potential deviations from success. In addition, it responds to the call for a theoretical framework on esports athletes’ careers (Cunningham et al. 2018; Salo, 2017) and adds to our existing knowledge on esports career initiation and development processes. A baseline understanding of the career development of esports athletes will support policymakers, practitioners and managers in making more effective decisions on improvements to key regulatory issues (e.g., athletes’ rights and protection), disciplinary (e.g., bribery behavior and corruption) and governance matters (e.g., competition policy and regulations) and sustainability development (e.g., talent management and development programs). This has the potential to help frame the planning of and support for the optimization of esports athlete’s identification and recruitment, promoting athlete commitment and the improved management of talent flow.

To understand the nature of esports as an industry is not straightforward; it is a novel field of sport driven by digital technology and therefore inherently fast-changing (Kordyaka, Jahn, & Niehaves, 2020). It is also one that merges elements of culture, technology, sports, and business (Jenny et al.,
The industry has arisen from the amalgamation of three industries – sports, media and entertainment, and therefore incorporates multiple communication platforms. The newness of the industry, interconnective nature of multiple platforms and complex relationships between various stakeholders (Kim & Thomas, 2015) not only lead to ambiguity in defining and understanding the fundamentals of esports (Jenny et al., 2017), but also build up issues and challenges at the legal, managerial and operational levels (Holлист, 2015). It is suggested that these elements all contribute to more complex but also vibrant and dynamic careers for esports athletes in comparison to those of conventional sports (Taylor, 2012). As a newly emerging industry, a complete picture of esports career transitions does not yet exist (Holлист, 2015). Currently, there is little research attempting to chart the patterns and unknowns of esports career development. The complex nature of esports implies that traditional career development models (e.g. Holland, 1985; Super, 1980) may be inadequate to capture the uncertainty and constantly changing nature of esports careers. This then necessitates a theoretical advancement on career development, an enhanced theory and application that reflects an emergent and turbulent field.

Originating from the natural sciences, Chaos Theory (Kauffman, 1995) is used to study the behavior of complex, nonlinear dynamical systems. Bright and Pryor (2011) suggest that a complex dynamic system of career development in the 21st century can be better understood through the application of the Chaos Theory of Careers (CTC). Where previous studies of conventional sport career development have widely used transition/stage-based career theories (see for instance work by Stambulova & Ryba, 2013; Wylleman, Alfermann & Lavallee, 2004), this study explores the application of CTC in an attempt to decipher the complex, constantly changing and nonlinear nature of career paths within esports.

This study seeks to fulfil three objectives: firstly, to identify the characteristics of career pathways for esports athletes; secondly, to explore the key activators for esports career development; and thirdly to establish a framework to elucidate the complex and dynamic process of esports career development in a contemporary setting. To achieve these objectives, we first provide a review of recent studies carried out on career development in esports and identify the knowledge gap. We then examine the suitability
of different career theories within extant literature to illuminate the esports career. An overview of the
fundamentals of CTC is also discussed. Next, the research design and methodology are presented. We
then present our conceptual framework alongside the findings. Finally, we conclude with the
contribution and implications of this study.

2 Literature review and theoretical background

2.1 Esports and its career development

Esports have been defined as forms of “alternative sport realities” (Hemphill, 2005, p.199), where “the
primary aspects of the sport are facilitated by electronic systems; the input of players and teams as
well as the output of the esports system are mediated by human-computer interfaces” (Hamari &
Sjöblom, 2017, p.211). Existing research on esports has explored the history of esports and the key
drivers for its growth (Himmelstein et al., 2017; Seo, 2013); whether esports should be qualified as a
professional sport (Taylor, 2012; Wagner, 2006); the inclusion of esports in the sport management
domain (Funk et al., 2018; Heere, 2018); the motivations for playing esports (Martoncik, 2015; Weiss
& Schiele, 2013), the consumption of esports (Hallmann & Giel, 2018) and the co-creation of the
experiential value of esports (Seo, 2013), the mental obstacles esports athletes face (Himmelstein et
al., 2017). In spite of the increase in academic attention in this area, the theorizing of esports is still
lacking. As Cunningham et al. (2018, p.4) suggest, “Much of the work to date is atheoretical in nature,
and as such, there is no firm foundation for building research questions or hypotheses, designing
methods, analyzing data, or drawing conclusions.” In particular, scholars Bányai et al. (2018) and
Cunningham et al. (2018) have called for more research to capture the career aspects of esports
athletes within this emerging industry.

Of the limited studies on the career development of esports athletes, stage-based models and
frameworks based on traditional career theories have been used. Kim and Thomas (2015) developed a
five-stage theoretical model of professional video gaming players based on Activity Theory
(Engeström et al. 1999). Seo’s research (2016) suggests that players pursue a professionalized career
based on the virtues of an esports ethos which provides them with a sense of self-actualization and
pleasure. The author then identifies three common stages within esports players’ identity transformations and progression from a casual participant to a professional player, including “the call to adventure”, “the road of trials”, and “the master of two worlds” (Seo, 2016, p.271). More recently, Salo’s research (2017) proposed a conceptual framework for esports athletes’ career transitions based on the combined literature streams of sport career transitions and athletes’ career narratives. His framework divides esports athletes’ career progression into initiation, development, mastery and discontinuation.

2.2 Traditional career theories

Traditional approaches to careers are often characterized by their linear perspectives on career development, which emphasize career decision-making as a rational and controlled process that occurs in stages (e.g., Holland’s person-environment fit model, 1985; Super’s life span, life-space theory, 1980). In spite of being widely cited, these conventional models are increasingly criticized for assuming a narrow range of variables relevant to an individual’s career and job environment (e.g., Arnold, 2004; McMahon & Watson, 2007). Traditional career theories promote the ideas of prediction and control in individuals’ careers (Spokane, Meir, & Catalano, 2000). Bright and Pryor (2019) suggest that these traditional career theories over-simplify the nature of decision making and career development, in addition to placing an over-emphasis on career paths as logical processes, categorized into discrete developmental stages. These traditional theories assume that career development can be planned out based on a range of parameters in relation to, for example, personality types, occupational interests, job satisfaction, stability and achievement. Nevertheless, these approaches would be inadequate to predict career development paths when applied to occupations within emerging industries. As a result of advances in technology which have led to the Fourth Industrial Revolution, new business models and emerging industries have been generated (Yun et al., 2019), such as companies applying sharing economy (e.g., Air BnB, Uber), and blockchain-driven start-up businesses. Many structural changes have been seen (in relation to, for example, new suppliers, customer bases, business models, products and services) confounded by the complexity of cross-sector spill over (Monfardini et al., 2012). These variances have made the career paths of occupations in
these emergent industries more difficult to predict and control owing to both the environmental complexity and lack of established data.

As a result of the rapid changes and development of information and technology, career development theories have seen considerable changes in the last two decades. Moving away from the traditional positivistic career theories (e.g., matching, linear or stage-based models), researchers have suggested that modern careers rarely follow logical and linear paths (Borg et al., 2006) but could instead be viewed as “a complex adaptive entity, a fractal of the human entity” (Bloch, 2005, p.194). There has been a trend towards developing more comprehensive career frameworks from postmodern and constructivist perspectives (Bikos et al., 2013). Systems Thinking places emphasis on recursive interrelationships (McMahon & Patton, 2018) and looks at how to manage situational complexity (Espejo, 1994). Drawing on this McMahon and Patton’s (2018) Systems Theory Framework combines modern and post-modern career theories and provides a metatheoretical framework of career development. Extending on Systems Thinking, Pryor and Bright (2003) introduced CTC which presented “a conceptualisation of careers that captures some of the most important aspects of work in the 21st century – namely, continuous change, uncertainty, complexity, constructivism, non-linearity and connectedness” (Borg et al., 2006, p. 57).

2.3 **Chaos theory of careers (CTC)**

Originally developed in the fields of mathematics and physics (Kaufman, 1995), Chaos Theory studies the concept and behavior of complex, nonlinear dynamical systems. The theory indicates that complex systems appear to behave in a random manner and not be governed by any law; yet, there is an underlying unseen order beneath the chaos (Abraham & Gilgen, 1995). According to Pryor and Bright (2011), two principles of Chaos Theory could be applied to the study of careers: self-organization (accounting for stability and structure) and change. The complex dynamical system of career development incorporates both self-organizing order (stability) and the unpredictability of change. The research into chaotic systems in the natural sciences is now well established whilst studies of chaotic behaviors in social sciences began emerging in the past three decades (Gregersen & Sailer, 1993), for
example, the application of Chaos Theory to economic systems (Savit, 1991) and strategical
management (Levy, 1994). The use of CTC in this study not only exemplifies contemporary career
development, but also provides an updated perspective on the application of CTC to career
development and contributes to the theoretical development of career theories in general.

CTC has been applied mostly in the educational context as career education and counselling
interventions, mostly with high school and university students. Studies have revealed positive
responses from students and parents on interventions based on career education programs underpinned
by CTC (Borg, Bright, & Pryor, 2014; Loader, 2011). Positive outcomes have also been reported with
university students from a career development counselling scheme informed by CTC (Prematillake &
Lim, 2018; Schlesinger & Daley, 2016). Nevertheless, a knowledge gap remains on whether Chaos
Theory itself may be appropriate for describing and explaining the patterns and characteristics of new
careers in the emergent industries. In particular, there is a call for further theoretical development of
CTC to demonstrate its relevance to career development, within a better understanding of how key
concepts such as “fractals, emergence, recursiveness and non-linearity and feedback and feed forward
impacts on decision making” (Pryor, 2001, p. 376) in modern careers. Drawing on CTC and based on
a university student sample, Prematillake and Lim’s research (2018) indicates that unplanned
encounters (e.g., unexpected employment through part-time work, visa policy changes) coupled with
the complexity of influences relating to both structural influences (e.g., financial stability, educational
qualifications) and personal environmental influences (e.g., relationships) affected graduates’ job
search expectations and choices. The application of CTC to date has been limited to the educational
setting. One of the contributions of our research is to enrich our current understanding of how the
fundamentals of CTC may also be applied to an alternate form of career in an emerging industry.

In summary, in the application of Chaos Theory on career development, Pryor and Bright (2011)
proposed an integrated framework that is thought to be more relevant for modern career development
than traditional linear theories. The use of the Chaos Theory model provides a new way to
conceptualize careers at a time when careers are transforming radically, driven by an increasing
dependence on technology. CTC conceptualizes career development as a dynamical system
characterized by complexity, interconnectedness and susceptibility to change (Pryor & Bright, 2011). The theory sees the individual as a complex, dynamic system, interacting with other similarly complex systems from other individuals through to political events and global disasters that influence the individual in varied ways (Bright & Pryor, 2007; Pryor & Bright, 2003). On the basis of the above discussion, CTC may potentially be applied to effectively capture the complex, dynamic and constantly changing nature of esports and its career development process. Our research therefore sets out to develop a better understanding of the esports career development process, which also adds to our existing knowledge on sport careers in general. The following section discusses the theoretical explanation of CTC and its defining concepts.

2.3.1 Precepts of CTC

CTC is characterized by the five defining concepts of: initial conditions; attractors; complexity, change and chance events; patterns and fractals; and construction. These concepts of Chaos Theory have been proposed and applied as a framework for describing career-path phenomena in the modern era (see for instance Peterson, Krumboltz & Garmon, 2005; Pryor & Bright, 2003). The theory conceptualizes reality as a combination of both order and unpredictability (Schlesinger & Daley, 2016), which scholars (Pryor & Bright, 2011; Schlesinger & Daley, 2016) have suggested best capture the main characteristics of contemporary careers.

A basic tenet of Chaos Theory is the sensitive dependence on initial conditions, known as the butterfly effect (Lorenz, 1993). This concept proposes that small differences in the initial conditions can cause great fluctuations in the final phenomena, drastically affecting the future outcomes of events in nonlinear systems (Lorenz, 1993). According to CTC, career path development is strongly influenced by initial conditions (those conditions at the beginning of the path) and turbulence (internal and external).

Another key tenet of CTC is the identification of attractors which refer to certain types of consistent behavior (Pryor & Bright, 2007). This describes the characteristic way in which individuals react and respond to the environments in which they live. They are the habits, predispositions, traits, abilities
and reactions to challenge and change, which constitute the basis for counselling and interventions in career development. The function of the attractor is to provide boundaries for behavior within a system (Chamberlain, 1995). Even the most chaotic systems do not extend beyond certain boundaries; they stay contained within a pattern that is recognized as the attractor (Wheatley, 1992). The unique traits of an individual (e.g. characters and aspirations) are thought to serve as attractors in their career development (Beck, 1999).

*Complexity, change* and *chance events* are the other tenets of CTC. There is a complexity of situational factors involved in career decision making (Flum & Blustein, 2000; Patton & McMahon, 2006). A chance event can be any event that was not planned for or expected, which serves as a trigger for change (Loader, 2011). In a system which is characterized by change and unpredictability (Pryor & Bright, 2003), CTC places emphasis on an individual’s responsiveness to new opportunities and unforeseen chance events. Chance events, which cannot be planned for, influence the outcome of career development for an individual, and CTC explicitly recognizes the importance of such influences on career development. Therefore, whilst it is not possible to predict the individual chance events that will happen, they must be expected and taken into account in order for successful career planning to occur (Pryor & Bright, 2003).

The concept of *patterns* and *fractals* is another key precept of CTC. It refers to the emergent patterns (i.e. fractal nature) that emanate from an individual’s life. Through exploring what the individual already knows about him/herself and recurring themes and patterns in his/her life, an individual will be able to uncover any emerging patterns that are affecting their career development process. This understanding helps to facilitate his/her navigation of the complex, unpredictable nature of career development – although there are limits to predicting the future, patterns and fractals inform the process by providing consistency and guidance (Schlesinger & Daley, 2016).

*Construction*, the final main tenet of CTC, refers to the phase where individuals become active participants in creating “their own futures rather than [being] pawns in a rigidly deterministic system of cause and effect” (Bright & Pryor, 2011, p. 164). Because careers are subject to chance events that
cannot be predicted, this phase reinforces the idea of constructing a career path through an individual’s ability to appreciate the emerging patterns in an uncertain and complex system. As described by Bright and Pryor (2011): “The lack of ultimate control or predictability opens up the opportunity for individuals to become active participants in the creation of their futures” (p. 164).

Through these five key CTC concepts serving as a theoretical underpinning to our development of a conceptual framework, this study seeks to extend the application of CTC to a newly emerged career within a contemporary environment and through it, elucidate the complexity and dynamics of esports career development. In the next section, we turn to the methodology of this study.

3 Method

This research seeks to investigate esports professional players’ gaming practice, career path and self-development through a qualitative study. Creswell (2014) suggests that researchers are at liberty to choose the methods, techniques, and procedures of research that best meet the research needs. With the lack of knowledge around career development in the field of esports, being an emerging industry in which clearly defined career transitions are not yet understood, a qualitative research paradigm and an inductive approach allow flexibility, attends closely to context and supports the generation of new theory and understanding. In addition, the adoption of qualitative research helps to unpack and shed light on the context as well as the related historical, cultural, social background that contributes to an enhanced understanding of participants’ actions (Weber, 1981).

Qualitative data were collected for this study through in-depth face-to-face interviews with esports athletes. Interviews allowed for the solicitation of stories with sufficient depth and complexity to emerge in the data, appropriate for a topic about which little is yet known (Warren & Karner, 2005) as well as providing “a powerful point of entry into a world from another’s perspective” (Mears, 2009, p.13). The use of in-depth interviews meant that data collected was not limited by the expectations of the researchers since participants could guide the data collection and broach topics which they deemed meaningful (Charmaz, 2006). These techniques facilitated an inductive approach to the research, with findings grounded in the ‘voices’ of the study participants (Strauss & Corbin, 1998).
The interview questions (see Appendix) were formulated based on two key threads – extant studies on the development of esports industry (Hollist, 2015; Lu, 2016; Yang, Ye, & Kang, 2011) and CTC (Bright & Pryor, 2011; Schlesinger & Daley, 2016). Five key themes were identified through a review of these studies which aimed to explore the career journey of esports athletes. While these five themes were intended to capture the career development of esports athletes, they were not intended to cohere exactly with the five concepts of CTC. These five themes were: First, the triggers for entering esports. Second, self-reflections on their own journey of becoming and working as an esports athlete including development, achievements and reasons for dropouts. Third, their daily training routine, motivations for remaining in esports, and aspirations for success. Fourth, career challenges and self-development opportunities, support for their careers, the impact of policy, regulations and governance on their career development. Fifth, their views on the development and governance of the esports industry, as well as plans for retirement and post-athlete careers. To support the factual accuracy and reliability of answers provided, participants were asked the same or similar questions more than once to check for consistency (Heinige, 1982).

The interview questions were drafted in English, with the intention of administering them in Chinese among the esports athletes. To assess the equivalence between the original English instrument and the translated Chinese (Mandarin), a translation and subsequent back-translation process was undertaken through a ‘team translation’ approach (Douglas & Craig, 2007). The interview questions were first translated into Chinese by one of the bilingual authors, then back translated into English by the other bilingual author. The results were then compared and collated. The comparison of the two versions led to the conclusion that the questions were sufficiently equivalent.

3.1 Sample

The research participants were professional esports athletes based in China. China is currently one of the most important regions in the development of the esports industry, overtaking Korea in terms of revenue to become the second largest region (behind the United States) in the global development of esports (Newzoo, 2020). The interviewing of esports athletes in China provided an extra layer of
contextual background to the understanding of esports development in general. The term ‘esports professionals’ within this study encompasses both current and retired athletes working within the esports industry. Interview focus was placed specifically on those who had experience and/or were working at the front-tier of the value chain in the esports industry, including the upstream and midstream levels. The upstream of the esports industry deals mainly with the production side of the value chain, including game developers, content creators and esports publishers. The midstream of esports industry is the core of esports value chain, responsible mainly for esports distribution, represented by event operation and media channels, including esports athletes, clubs, sponsors, and event organizers (Rong, 2019).

Currently, there are more than 5,000 e-sports teams in operation in China, and 100,000 esports athletes, with only 20% or less having a college degree (HRSS, 2019). Over 95% of professional players are male (Hilbert, 2019). In order to capture data to present the nature of career paths for esports athletes and gain a better understanding of their post-retirement options within the industry, the sample for this study comprised of current esports athletes, as well as esports entrepreneurs, club managers and chief coaches who were all retired esports athletes. Through purposive sampling, 16 esports clubs based in popular esports gaming cities of Chengdu, Beijing, Hangzhou, Shanghai, and Xi’an in China were identified for the recruitment of this sample. A total of 35 interviewees from these clubs were recruited through snowballing and word of mouth (see Table 1), including 24 esports athletes, 4 coaches and 7 senior management executives (e.g., CEO, club directors, senior managers).

Although there was no intention to seek out male only sample, all interviewees were male. However, this reflects the male domination of the esports industry in China (Hilbert, 2019). The interviewees’ ages ranged from 17 to 28; they were either active athletes (at the time of interview) or retired from esports between one to five years. In-depth interviews were conducted individually, with each lasting

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1 Within our sample, 6 interviewees (17%) held undergraduate or college degrees.

2 The average age of LPL esports athletes is 21.5 in China (www.52pkplay.com, 2019). In 2019, 83% of esports professionals were younger than 30 (www.eastday.com, 2020). The average age of our sample is 21 which is roughly consistent with the esports population in China.
between one and a half to three hours. While all interviewees were given the option to anonymize their identities, some of them waived their rights and opted to use their gaming identities or real names.

[Insert Table 1 here]

3.2 Data collection and analysis

Face-to-face semi-structured interviews, which allowed for more open-ended questions supporting interactions with the research participants, were conducted by the authors from January to July 2018 in the respective Chinese cities where the clubs were based.

Interview data were first transcribed in Chinese and then translated to English. To ensure the credibility and rigor of the results obtained (Silverman, 2016), reliability and validity have been considered to check the consistency of the data translated. To support an unbiased interpretation of data, an independent third party, a Chinese native with vast experience of translations in academic and business environments, then verified the accuracy of the translation by checking differences in meaning between the original and back-translated interview data.

The translated transcripts were first reviewed holistically by all authors to decipher the data collected. A rigorous coding protocol was then observed through the data examination stage for identifying, extracting, articulating, indexing and clustering the data. The analytical process involved independent evaluation work by all authors followed by discussions to resolve any differences (Silverman, 2016). Inter-coder reliability was established through this process, which improved “the systematicity, communicability and transparency of the coding process” (O’Connor & Joffe, 2020, p.1). In the initial step of the analysis, all authors went through all the interview data and coded the same data separately. This process was repeated by all authors until saturation occurred where no further codes could be obtained (Creswell, 2013). A comparison was then carried out on the resulting independent coding and discussion was carried out to clarify definitions of the coding scheme and to work out any divergence. Each author then independently categorized the data. The emergent results were then compared and discussed. The data was then analyzed using thematic data analysis in reference to the five concepts of CTC, where preliminary findings were drawn up. The sample codes and analytic themes, in
conjunction with illustrative quotes, are outlined in Table 2. By the end of this stage, an agreement was reached where the whole process led to the inductive generation of the esports career development discourses which are discussed in detail in the section that follows. The findings contain quotes that demonstrate most effectively views and experiences reported by participants.

[Insert Table 2 here]

4 Findings and discussion

4.1 Overview of findings and conceptual framework

Our data analysis produced a set of discourses underpinned by the five fundamental conceptual themes of CTC. These are distinctive processes, not to be mistaken as stages or steps that happened in a rigid order requiring sequential completion, as emphasized in CTC’s non-linearity. Applying these five precepts of CTC to the esports context as introduced in section 2.4, we developed a conceptual framework which captures the essence of the chaotic nature of esports careers (see Figure 1 below).

[Insert Figure 1 Here]

The illustration within the figure above is based on the “Lorenz attractor” image (Lorenz, 1963) describing what is known as the “butterfly effect”. The figurative butterfly conveys the concept of CTC where a small change in starting conditions can have non-linear impacts on a complex system. The functioning and trajectory of the system can be understood as, and identified by, its characteristics of initial conditions; attractors; complexity, change and chance events; patterns and fractals and construction. The interactions amongst these five themes are exemplified through the figure. Our findings indicate that interdependencies do occur between the actors in the same environment, for example the athletes, coaches, managers, clubs, sponsors, media, governing organizations and governments. The following sections discuss how our findings cohere with the five elements of the conceptual framework.

4.2 Initial conditions of entry
CTC theorizes that the crucial initial condition is likely to have profound implications on future career development. Initial conditions that relate to the development of an individual’s career path may include the opportunities available, congruence between interests and work, related abilities and the social connectedness that the individual has (Peterson et al., 2005; Pryor & Bright, 2003). According to the narratives of our participants, the starting points of their careers were often influenced by several factors. From our findings, these initial conditions can be grouped into two categories – internal and external conditions.

Internal conditions are triggers relating to personal circumstances, curiosity, passion, interests and attitudes that initiated one’s career (Nimrod & Kleiber, 2007). Within the data, participants’ interests and passions were such examples commonly cited as one of the key initial conditions. We gathered from the findings that most professional players started their journey into esports in their teenage years as a form of leisure entertainment, hobby and/or interest. This may indicate that becoming a professional player is likely to be incidental initially. As Wuya (20, Chief Coach), observed, “[For] many of our players, their initial motive was purely due to their personal interest and passion for playing computer games.” Very often, in the early and entry phase, the interviewees viewed esports or gaming as a casual leisure activity. “Playing for fun”, “getting to know the gaming community”, “gaming with friends” were some of the reasons cited by the esports athletes. Family, friends, peers and acquaintances were cited as influential sources for their initial involvement. Alex (20, Esports Athlete) explained that, “When the game came out, because I didn’t really know anybody playing professionally, I was playing with my cousins, and friends from school. That was pretty much the norm.”

At the same time, individuals’ natural talent and ability appeared to play an important part in the formation of these initial conditions:

Firstly, they [esports athletes] are gifted in terms of their natural motor skills. They are quick with their hand-eye co-ordination. Secondly, they must have excellent dynamic and static vision, that is, the ability to capture and process the information in an instant from any moving
images. Another attribute, I think, which is also an essential part of their talent, is logical thinking, although it can also be enhanced through intensive training. Some are born [with this ability], they may be called ‘naturally intelligent children’, who can react quickly and make appropriate judgements, based on a series of conditions [in the game]. These three qualities are the common characteristics [in esports players] and what we call talent in fact. These are not something we can train, well, only to a certain extent. Players who possess these qualities are likely to continue and succeed. (Peng Jianbin, 28, Chief Coach)

You don’t need to be physically fit. But you do have to have a sharp mind! (Li Xiaoming, 24, Project Director)

External conditions, on the other hand, are influences outside of one’s control such as the political, economic, social, technological and environmental contexts (Nimrod and Kleiber, 2007). From the political perspective, the first national esports team was set up by the Chinese Sports Ministry in 2018 representing China to compete in the 2018 Asian Games, which demonstrates evidence of the growing importance of esports in the country. Looking at the Socio-economical perspective, a recurring theme influencing the decision to embark on esports as a career was that of financial attractiveness. An example of such an initial motive can be demonstrated by Xiao Mao (20, CEO and Chief Coach), a retired esports athlete who is currently managing an esports team. He recalled that, “my mother thought that since I am not doing well in school, I might as well turn my hobby into a career and try to make a living out of it. Hopefully I could support myself.” In fact, the draw of financial return was echoed by a team coach and a club manager that prompted players’ entry into esports:

Alongside their personal ability and interest, the economic aspects [of esports] will attract them to get into this industry. Some may think they will have the chance to make a fortune just overnight – this is what traditional careers won’t give you. (Xiao Liao, 24, Operations Director)
In the recent two to three years, we’ve seen parents voluntarily sending their children to our club [to be trained to be future esports athletes] .... Because now everyone can see that the industry is booming and starting to generate huge financial return. (Yi Ran, 24, Club CEO)

Furthermore, China is now one of the world’s major players in esports after almost a decade of rapid development (Lu, 2016). There are 11 Chinese streaming platforms that broadcast esports tournaments and professional gamers in the country (ESC, 2019). Domestic league matches are watched on the internet by millions of gaming fans globally (Newzoo, 2020). Viewership in China for popular esports tournaments such as Honor of Kings (Wang Zhe Rong Yao) and League of Legends can attract 80m viewers per match (Hancock, 2019). Our respondents suggested that such high-profile development make it an appealing career path for many young people in China. The aspiration and possibility of becoming famous seemingly motivate young people to embark on the journey to become esports athletes:

Have you heard of ‘fan economy’? Esports stars have millions of followers [on social media]. Fans are crazy for them…. [If you are a star], you will have fans follow you around [to competitions], give you ‘rewards’ through live streaming, and no mention of the lucrative income to be had from endorsement and sponsorship. (Weiwei, 20, Esports Athlete)

This is aided by the fact that with technological advancements and improved access to the Internet, the threshold for esports initiation is low in regard to individuals’ resources and efforts, as remarked by Mika (23, Club CEO), “A gaming professional just needs the Internet and a console, PC or mobile phone!”. Young people with access to the Internet and/or games devices can start gaming rather easily and spontaneously nowadays: “Every family has computers now and children all play computer games from young age. It’s unlike the old times when we had to go to Internet cafés [to play games].” (Xiao P, 21, Esports Athlete)

Both these internal and external conditions may exert influence over the trajectory of an individual’s esports career development. Our interviewees’ responses indicate that the way an esports career consequently develops and takes shape has a sensitive dependence on the initial conditions, with a
particularly pronounced effect on undecided individuals. In other words, influences such as parental support (vs opposition) and support structures (e.g. clubs) in the initial phase of a career may cause great variations in the final outcome.

The importance of the initial conditions prompting the consequent developments was felt by respondents. As one of the coaches (Peng Jianbin, 28, Chief Coach) explained, “Most players over the age of 17 – they get full family support to enter this career. That way, they are more likely to make it.”

This sentiment was echoed by Lula (21, Esports Athlete), who felt that getting scouted by a professional coach gave him the confidence to turn a casual leisure activity into a full-time career:

I like strategy games. I was only playing casually and ended up getting picked out. I was thought of as a really good player. That really helped me and provided me with the courage to convince my parents to let me have a go.

Conversely, as more and more young people are exposed to esports, an activity that requires considerable engagement time to achieve and/or maintain one’s league status, gaming addiction has become a widespread problem. The term ‘electronic heroin’ was invented to condemn the ever-expanding esports industry (Lu, 2016), which was believed to be causing young people to become addicted and to lose interest in their studies. Lu (2016, p. 2201) suggests that, particularly in China, “parents, educationists, and doctors have expressed growing concern over the social and health costs of the esports industry”, where “academia, media, and the general public are becoming more cautious about the development of the esports industry”. The negative press and reports on gaming addiction, and its effects on young people, have triggered parental dissent towards involvement in esports for their children. This ‘initial condition’ of societal opposition and discouragement from parents has inevitably impacted on and halted further involvement of some young players who have just started out on their esports venture:

In the Chinese context, many parents still have traditional ideas and all hope that children can study well, take ‘Ke Ju’ [national level examinations] first in everything. Sports, arts or even esports, these ‘San Jiao Jiu Liu’ [unconventional, inappropriate activities] would not work.
They [parents] feel that they will lose face when chatting with friends and relatives. (Wuya, 20, Chief Coach)

Our findings indicate that the initial conditions of entry to esports are unique to individuals. This individual uniqueness is a reflection of the convergent nature of esports (Jin, 2010), as an amalgamation of multiple elements that are “cultural, creative and consisting of content, entertainment, media, business, spectacle and sport” (Vera, Terrón, & García, 2018, p.43). This has given rise to multiple means of entry into the esports industry, where the phenomenal social and mediatic boom of the industry has drawn many young talents with unique and combined skills and expertise to it.

4.3 Attractors

Attractors in a chaotic system can be understood as characteristic trajectories of the system (Kauffman, 1995). An attractor indicates a system’s long-term behavior, which sets the limit within which the systems operate. These limits are system boundaries which guide individuals’ career paths. In career development, this conception applies to the limits of what may be acceptable to individuals, for example, in terms of their ethics, motivation or preferences. It may also apply to the limits on their capabilities as a result of their natural abilities as well as their developed skills (Pryor & Bright, 2003). Applying this to esports careers, we identified individuals’ values, culture, aspirations, and abilities as attractors, i.e., the system boundaries keeping esports athletes’ careers on the track.

What makes them go further … well, the most basic is teamwork, an ability to work in a team. They must be able to communicate with each other too! Very important also, self-discipline, right? And, they must have the aspirations to succeed, so that they can take the future into their own hands. (Yi Ran, 26, CEO)

In addition to the talents that they have for the game itself, there are other basic qualities required. They will need to be a quick learner and have strong adaptability. They need to be comprehensive in all aspects. With rapid learning ability and adaptability, one can become very competent [in esports].” (Peng Jianbin, 28, Chief Coach)
All of the esports athletes interviewed displayed a strong belief and conviction in their capabilities to succeed when they first started. As Alex (20, Esports Athlete) recalled, “We were aiming only to be champions! Nothing less!” Persistence and self-motivation among the esports athletes are the attractors driving their careers forward. Some interviewees also cited the importance of role models on motivating their personal career pursuit. Wuya (20), a retired pro-player currently working as a team manager in the D7G esports club, explained that the Chinese esports team Invictus Gaming’s claim to international success with their victory in the first League of Legend World Championship in 2018 was a moment “all Chinese esports athletes have prepared and waited for”. This achievement has motivated his own esports team:

It is our internal motivation of nationalism that we finally beat the Koreans … It is similar to the success of Liu Xiang [Chinese hurdler, Olympic gold medalist] … we all respect him and we are so proud of him on the account that he has achieved a seemingly unachievable goal of winning a gold medal in a sport which Chinese would never have been expected to win. This is mission impossible made possible! (ADD, 19, Esports Athlete)

Such victories in events and role model champions serve as attractors that inspire players to work towards their goals and provide the drive to overcome the challenges to become a successful esports player:

They [these athletes] generally think of something … a goal, an event, a person … as their innermost motivation to help get them through the relentless training or to help them maintain the focus. The first one is usually their desire to become a champion. The second one is role models. There are some legends and legendary players in esports. For example, Sky [Li Xiaofeng, Chinese former esports athlete] and so on. These famous players are probably the benchmarks and goals in the hearts of many young players. (Xuecheng, 24, Chief Coach)

Dedication and the mental strength necessary to handle stress also appear to serve as attractors in building the capacity to develop an esports career:
They may have started because of their love and passion for the game in the early stage, but after they joined the club [as an esports athlete], they would start to realize that this is a profession and it requires a lot of comprehensive skills. [With this understanding], they can then help themselves to become a better professional, do a better job and slowly mature. (Peng Jianbin, 28, Chief Coach)

Although there is no lack of talent, as a manager, we prefer to stick to reliable players who can handle the stress and pressure of world championship tournaments. Their patience and psyche will be strained throughout the training and journey towards the championship. The competitiveness and often ruthless nature of esports tournaments is very much a psychological challenge which players must have the mental strength to overcome. (Mika, 23, CEO)

If it’s not physical deterioration, then the issue must be mental stress, burnout ... These are the key culprits for a short career span, forcing them into early retirement. You’ve got to understand, these are young people you are talking about. They may have the physical alertness, but not the mental or emotional maturity to process what is happening around them and to them. (Xiaomao, 20, CEO and Chief Coach)

Scholars (Pryor & Bright, 2003; Schlesinger & Daley, 2016) emphasize that without attractors acting as boundaries to a system, what results is disorder. This can also be seen within the esports context. Coaches also act as the attractors in overseeing individuals in what might otherwise be a meandering career journey. Coaches play the role of advisor in encouraging individuals to develop a sense of purpose based on their competencies and aspirations (i.e. attractors). This way, coaches can then confidently allow for fluctuations in players’ career development if they know that the system boundaries are in place (i.e. players will rebound and/or stay within the career trajectory):

Many of us who are coaches are often encouraging these talented children to persist in their pursuit of esports career, especially when we can see their potential to go far. Yes, it is very difficult to follow this path, we tell them … and they may not succeed even if they practice
hard. But one should always have faith. We always advise them that when they look back one
day, at least they won’t regret it. (Li Chun, 28, CEO and Chief Coach)

4.4 Complexity, change, and chance events

Our interview data indicate that esports athletes’ career paths are complex in nature. Firstly, we have
found that there are many variations from our respondents with regards to the era when they entered
the system. One of the retired athletes, Chuan Qi (28, Retired Esports Athlete) commented that the
support available for developing esports as a career is quite different now compared to when he first
started in the early 2000s:

Actually, the boundary between professional and non-professional was not quite a clear cut at
that time, unlike now. Once you have signed the contract and finalized the payment of ‘Wu
Xian Yi Jin [Five Insurances and One Fund]’, it means you are already professional.

Owing to the lack of proper structure, governance and guidance in the early days of the esports
industry in China (Lu, 2016), there was a high level of uncertainty in terms of the career prospect in
the industry. Consequently, it resulted in different career choices and outcomes for athletes. Chuan Qi
(28, retired esports athlete), for example, chose to give up his esports career and further his studies
instead:

I had lots of concerns in terms of the whole [job] security of esports development and its future
prospect at that time when I was at my peak. But now I understand that I was being short-
sighted [laughing]. If I knew [esports] could take off like this, I would not have retired so
quickly. However, in spite of the many official research reports illustrating the bright future of
esports, we are only aware that the industry will be worth RMB 90 billion … a huge pie to
share, but no one can be certain who and which project will benefit from it…right?

3 Refers to China’s social security system which is made up of five different types of social insurance and one mandatory housing
fund. It is compulsory for anyone joining the workforce.
Secondly, along with the immense rise in popularity of esports over the past decade, the road to becoming a professional esports athlete has become increasingly competitive. Turnover and elimination rates are high for a short-lived career, as illustrated by Cat (17, Esports Athlete), “Most professional players are out of a job in less than half the time it would take us to complete an undergraduate degree.” These sentiments were also echoed by other interviewees:

Competition at a professional level is fierce and the players may be dismissed at any time. As the infrastructure improves, more and more people are competing to join the esports industry. Compared with traditional sports, the esports entry threshold is low, but its professional requirements are extremely high. This leads to the high elimination rate of professional players. The proportion of successful entry [as esports athlete] is awfully low. It is a cut-throat industry. (Weiwei, 20, Esports Athlete)

The elimination rate is very high, it is much more difficult than the [Chinese] university entrance examination [to be an esports athlete], the difficulty is about 50 times higher. (Tuzi, 17, Esports Athlete)

Thirdly, although the past decades have seen the professionalization of esports and improved management of its development in China (Lu, 2016), its governance structure is apparently still patchy. As a young industry, due to the lack of experienced managers, some clubs are being managed by inexperienced management teams, which also accounts for high turnover of athletes:

The reason why the management of the club is difficult is that the management personnel are mostly retired professional players. They are also young and have no professional management training. Not only are they managing young people not much younger than them, they often rely on rules and regulations reproduced directly from the management of esports clubs in Korea, and reapply them in the management of their own players. It is hardly appropriate and may not be entirely applicable to the Chinese context. As a result, the outcomes are not satisfactory. This is currently a huge challenge facing the esports clubs here. We do not have a
management system of our own … that is suitable to run the club in a better way. (Li Xiaoming, 24, Project Director)

Fourthly, our findings also suggest that chance events also contribute to the complexity of esports careers. Esports career development and outcomes can be shaped by a combination of chance events. These chance events, as described by Peake and McDowell (2012), include externally imposed influences, events emanating through social connections, as well as simply being in the ‘right place at the right time’. In this study, we identified two main types of chance events. The first is within the recruitment and selection process of esports athletes. Xu Haoran (23, Project Director) mentioned three main recruiting channels:

Firstly, clubs are always actively looking out for talent to join their team. Players who have reached a high level in the game and are amongst the best in the league table, they get noticed. This is the main way to select new recruits to form a team. Most of the players in the early stages of a new game project are often handpicked in this way. Secondly, one can be recommended by industry insiders. Professional players or coaches will encounter many passer-by players in their daily training. If the players perform well in the game and have displayed a willingness to play professionally, they may get the opportunity for trial training through the recommendation of the coach to the club. If they performed well, they may have the opportunity to be signed up by the club and registered as a professional player. Finally, semi-professional or master-level players who participate in high profile competitions, who have demonstrated their caliber in the competition may get invited to join a club.

Another main type of chance event that occurs within the industry relates to media exposure and live streaming. A study by Bright et al. (2005), found that unplanned and serendipitous career decisions and/or events were also commonly recognized as having an important influence on career outcomes. This is illustrated through Peng Jianbin’s interview (28, Chief Coach), a veteran coach who made the following observations on the unplanned decisions that players took as a result of media exposure which had a critical influence on their career paths:
Although live streaming is probably the most influential factor in promoting the development of esports, the fact that it caught on too fast can be a bane too. During the outbreak, we wasted a lot of time and energy on distractions brought about by the appeal of live streaming, which were unnecessary. For example, some talented players were supposed to continue playing in competitions, but they choose to be a streamer. Then, they disappeared completely from the circuit. When asked, they said regrettably that the streaming business had not been successful. This is because some players are technically skilled and not eloquent or savvy enough to be a successful streamer. On the contrary, some players who were not performing well in competitions, ended up as celebrity streamers.

Chance events appear to have a significant effect on career trajectories in esports. When embracing an open system thinking, as advocated by CTC, it is important to recognize that “the unexpected can and sometimes will happen” (Bright & Pryor, 2011, p.47). The professional players who have made successful career transitions demonstrated that the willingness to embrace chance events and the ability to effectively use the resources that are available is a key asset. Subsequently, chance events in individuals’ esports careers provide them with the opportunities to build up their financial capital and further their careers.

4.5 Patterns and Fractals

Although the development process of esports careers are deemed chaotic, they can still be seen as retaining an emergent orderly pattern. Through mapping the career narratives of the professional players, it has revealed that there are regularities, similarities and symmetries in the individuals’ career experiences. One of the first key patterns mentioned in the narratives was the general consensus on athletes’ career longevity and age. The average age of the 24 current esports athletes involved in our interviews was 19. The average of the ages they started as a professional was only 14.5 years old. According to our respondents, an esports career as a professional athlete was generally extremely brief, as a result of the profession’s reliance on the cognitive alertness of players:
The age of entry [to this industry] is very young where most of them are no more than 18 years old. Professional esports requires a high standard of reactionary sharpness and processing speed. For this reason, most mature esports athletes are aged between 18 and 28, with an average age of 19. Their prime time is just a few short years from 18 to 22 years old. (Xiao Mao, 20, CEO and Chief Coach)

In spite of the fact that esports is dominated by professional players in their early twenties, the younger players are always the best players. It’s very competitive and just by being a few years older, you lose the edge and it slows you down. It shows. (Youci, 17, Esports Athlete)

A second emergent pattern observed was that athletes have long working hours where the pressure to perform is high, with a particular lack of time for any interpersonal relationships and social life outside their ‘gaming house’:

Training is tough, the club's training program is mostly between 10 to 12 hours a day, from noon to late at night. We have to dedicate a lot of time to practice. (Zoo, 20, Esports Athlete)

Esports athletes also require constant cycles of intense training and learning. Routine training is required to help players develop their skills for competitive gameplay, such as team management, a balanced body and composure, and understanding of the technology in use. Daily practices can range anywhere from 10 hours daily, up to 16 hours in some cases. It is not uncommon. (Momco, 18, Esports Athlete)

A third emergent pattern was that professional players face constant struggles in their paths to attain or remain at the top of their leagues, often going through different stages of an ‘emotional rollercoaster’ at some point of their career, including enjoyment, self-doubts, success, stress, slumps and recovery:

Esports is a young industry with unique characteristics. They are a group of young adults. The development of their minds has not yet fully matured. They are easily tempted by distractions in daily life. We [as coaches] have to deal with many mental and psychological problems of our players. They are still kids after all. (Li Chun, 28, CEO)
Yes, [we] sometimes are frustrated and stressed. For example, after the end of a game, you find someone you know before, he may be your former teammate, or someone you are very familiar with, he was not as good as you. But when this game is over, he is the champion, and your results [for this season] are very bad, or even if you are still the runner-up, you may feel it is unfair, disappointed, hurt and lonely deep inside. (Dalong, 18, Esports Athlete)

Well, even the most experienced players sometimes have to rebuild their confidence after failure. (Angel, 19, Esports Athlete)

A final emergent pattern was the high level of mental strength and resilience, passion for the profession and the hunger to win that came through from the interviewees as defining qualities of successful esports athletes:

Those young practitioners … they are all good at thinking, passionate, competitive, and eager for success. (Xiao Liao, 24, Operations Director)

There are talented players who can translate nerves into adrenaline and conversely, players who collapse under the weight of expectation … or those who never recover from their defeats and failure. To be able to bounce back from defeat is often the difference between mediocre players and true champions. (Alex, 20, Esports Athlete)

4.6 Construction

As noted by Pryor and Bright (2006), despite constant change in a system and the fact that careers are subjected to chance events, elements of order remain (i.e. patterns and fractals). According to Bright and Pryor (2011), “The lack of ultimate control or predictability opens up the opportunity for individuals to become active participants in the creation of their futures” (p. 164). Because esports careers are nonlinear and cannot be easily predicted, esports players found it essential to focus on the emerging order. The appreciation of the emerging patterns of order in the midst of change allows players to move on and construct their own career paths. Within the complex and dynamic system of an esports career, our findings suggest that players became active participants in creating “their own
futures rather than [being] pawns in a rigidly deterministic system of cause and effect” (Pryor & Bright, 2011, p.164):

Players understand that their success is not based on a single decision, but on a multiplicity of decisions. With no guarantee that they will make it to the top, players will eventually realize that what they can do is pull all the stops out and put in their best efforts in everything they do in order to stand a chance at succeeding. (Xuecheng, 24, Chief Coach)

Players react to the unpredictability by focusing on and gaining comfort with the uncertainty of the emerging order. A way of doing it is to remain flexible and adaptable to changes, for instance, rising to the constant challenge of new game patches (i.e. updates) by game developers:

Adaptation is crucial in gaming because game developers often tweak their product or patch the game to adjust the way it’s played, on a very regular basis. This is to ensure that no single player is dominating the gameplay. This is also to create a reason for non-professional amateur players to return to the game and try to master the game after the tweak. As a professional player, you just have to adapt fast enough.” (Qiuqiu, 18, Esports Athlete)

Although long-term forecasting is almost impossible and dramatic change can occur unexpectedly, players are able to focus by following the emerging patterns and creating short-term flexible goals to construct their career. This is illustrated through an example cited by one of the interviewees, reflecting on his journey towards becoming an esports athlete:

We all [aspiring players] knew that we wanted to be signed up by large esports clubs. That’s the first step. There you get supported by coaches, analysts and managers. You get professional support from people who can help you move closer to the dream of becoming champions. This is what we were working towards to … what kept us going. (Karin, 19, Esports Athlete)

The narratives of the interviewed athletes suggest that from the initial stages onwards, they start to focus on systematic progression, i.e. rising through the ‘ranks’, as explained by one of the coaches:
When establishing a team, there are six recruitment stages in most clubs in China. A group in
the youth system has about 30 people and I may only select, at most, one or two people. Even
if they were to stay and go on to become the main force and a star of the club… they would
still have to face many stages of progressive screening. They would have to be promoted to the
parallel team, then to progress to the substitute players of the main team and then to progress to
be the main players, and at last you may have chance to become a star player. They all go
through such a journey.” (Xiao Hei, 22, Chief Coach)

4.7 Inference

Our findings suggest that there is no direct entry point for esports athletes looking to develop a
professional career. The career path does not appear to follow any prescribed stages of progression,
and not all esports athletes have followed a similar career path. There is an apparent lack of a ‘typical’
career path. These discoveries indicate that traditional career theories, based on linear transition and/or
stage-based developmental paths, are ill-equipped to elucidate esports career development. Instead, it
is suggested that a more fluid and flexible theory, demonstrated by the principles of CTC is more
suited to capture the contemporary, complex nature and variation of esports career paths.

Inferring from the observations that emerged from our data, it reflects the inter-connections of the five
seemingly disparate themes. Firstly, initial conditions of entry can affect future esports career
development and there are multiple entry routes into the esports profession. Esports career
development is also subjected to, and interacts with, variances such as attractors and chance events,
which render an individual’s career development complex and unpredictable. Secondly, when chance
events in the individuals’ esports careers emerged they provided athletes with the opportunities to
build up their financial and career capital. It is these capabilities that allow successful esports athletes
to further their career construction. Thirdly, whilst the esports career development system exhibits its
complex and changing nature, there is also an underlying order beneath the chaos, which is
demonstrated by athletes following similar fractal patterns in their individual career experiences. A
career in esports is, in essence, a chaotic system that is influenced by very small changes. This makes
it difficult to predict the future, as the successes and failures of esports athletes can appear random. All esports career trajectories are effectively erratic from the point of view of practical prediction. Any small difference (e.g., motivations, encouragements) in the initial condition individuals are subjected to can cause a big difference in where they end up. Preparation for a future and seeing the logic in the chaos of a career in esports is not easy.

5 Implications, contributions, and conclusions

This study has sought to answer the need for theorizing on esports careers and move the discipline of sport development forward by fostering the application of CTC to the understanding of the development of a sports career in a contemporary environment. Our research suggests that classic theories and frameworks may no longer be adequate to reflect the characteristics of new forms of careers within the emerging industry of esports, where established career transitions are not yet in existence, nor progressing in distinct and/or linear stages. Esports, at its current developmental stage, presents a complex, dynamic, uncertain and changing contemporary environment, that cannot be described or explained using traditional linear models. The use of CTC we propose here may also provide an effective tool to demonstrate contemporary sport career development pathways and therefore has the potential to contribute to the theoretical development of sport development theories in general. Through an exploratory approach to applying the key elements and principles of CTC to the esports context, we have developed a framework which provides a constructive approach to understanding esports careers paths.

There are two key contributions. Firstly, our research extends the current application of CTC which previously has relied on directly examining the outcomes of the theory-informed interventions on the student population (e.g, Borg, Bright, & Pryor, 2014; Loader, 2011; Schlesinger & Daley, 2016). We revisited the key tenets of Chaos Theory and critically assessed their application to a real-world example of the esports industry. Through doing this, this research brings new insights to the theory based on primary data, and hence contributes to the theoretical development of CTC.
Secondly, through examining the career pathways of esports athletes, this study has drawn attention to the challenges of developing a career of great uncertainty within a complex contemporary world. Our findings provide insights into the process of becoming an esports athlete and draw attention to the new research field of a professional esports career. Although entry into esports is haphazard and does not appear to be governed by any predetermined pathways, there lies an unseen order hidden beneath the apparent chaotic process. Developments in an esports career are brought about not by careful planning but by seizing opportunities (e.g., through chance event) that arise. Through the complexity of influences, choices are made by players with varying outcomes which result in their career movements (into or out of esports). This demonstrates the “butterfly effect” as advocated by CTC which has a bearing on the outcome of their career development. The practical implication to managers, coaches and players then is that uncertainty in careers should not necessarily be viewed as a negative thing that must simply be endured, but rather could be viewed as a positive force, that when embraced may drive a career forward. This understanding may help stakeholders (e.g., players, coaches, managers, and supporting organizations) to manage and deal with chance events in the players’ careers in terms of how to develop the right way of thinking and how to respond to the change. It may also help stakeholders to better predict the outcome of complex situations by assessing what is currently known, what is not known, and what can be learned.

Additionally, this study has provided an exemplar of interdisciplinary collaboration, applying the often-disparate study of sports, digital gaming and career management to the case of esports development. This opens a new line of inquiry into research on sport development and management, encouraging the application of theory and methods between previously distinct disciplines. In addition, this study provides initial insights into the application of CTC in a new career beyond the student population that has been the subject of previous studies. CTC could be incorporated into future research studying other emerging industries (e.g., blockchain driven start-up businesses and others facilitated by new technologies within the sharing economy) to better understand the career development processes within newly formed occupations.
We also acknowledge the limitations of this research. Firstly, esports has emerged as a growing economic and business sector for which a complete industry life cycle has not yet been achieved (Chikish, Carreras, & Garci, 2019; Monfardini et al., 2012). The current research offers an initial exploration of how the characteristics of esports careers at this early stage of the industry life cycle can be described and explained by the application of CTC. We have argued that classic career theories do not apply to esports at present, but in the future it remains to be seen, as the esports industry becomes more established and transitions become more defined. Being aware of this potential limitation, longitudinal qualitative interviews may be adopted in future studies to explore the change of career recruitment, development and retention over time. This would provide further evidence and theoretical contributions to the development of existing career theories.

Secondly, this qualitative study has a small sample size. As such, our findings are preliminary and no claims about generalizability can be made. In addition, all participants were recruited in China. The limitation imposed by the cultural context would have to be taken into consideration. Although the scale of development and the importance of esports in Asia is more established than that of the Western countries (Vera et al., 2018), future studies may explore the similarities and variation between the Eastern and Western contexts in order to capture a fuller picture of esports career development.
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### Table 2 Data Analysis - Sample Codes and Themes

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<thead>
<tr>
<th>Quote</th>
<th>Level 1 Code</th>
<th>Level 2 Code</th>
<th>Analytical Theme</th>
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</thead>
<tbody>
<tr>
<td>“many of our players, their initial motive was purely due to their personal interest and passion for playing computer games.” (Chief Coach 1)</td>
<td>Playing for fun</td>
<td>Interest</td>
<td>Initial Conditions</td>
</tr>
<tr>
<td>“Alongside their personal ability and interest, the economic aspects will attract them to get into this industry.” (Operations Director)</td>
<td>Personal ability</td>
<td>Interest</td>
<td>Initial Conditions</td>
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<tr>
<td>“In the recent two to three years, we’ve seen parents voluntarily sending their children to our club [to be trained to be future esports athletes]” (Club CEO)</td>
<td>Parental support</td>
<td>Supporting Condition</td>
<td>Initial Conditions</td>
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<td>In addition to the talents that he has for the game itself, there are other basic qualities required. He will need to be a quick learner and have strong adaptability. He needs to be comprehensive in all aspects. With rapid learning ability and adaptability, one can become very competent [in esports].” (Chief Coach)</td>
<td>Quick learner and adaptability</td>
<td>Qualities for Success</td>
<td>System Requirement</td>
</tr>
<tr>
<td>“What makes them go further […] Very important also, self-discipline, right? And, they must have the aspirations to succeed, so that they can take the future into their own hands.” (CEO)</td>
<td>Self-Discipline and Aspirations</td>
<td>Qualities for Success</td>
<td>System Requirement</td>
</tr>
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</table>
Figure 1 Conceptual Framework of the Chaotic System of Esports Careers

Attractors
Values, Culture, Aspirations, Abilities

Patterns & Fractals
Young age, Long Working Hours, Psychological Struggle, Mental Strength

Initial Conditions
Interests, Passion, Talent, Environment, Technology

Construction
Flexibility, Short-Term Goals, Progression Through Ranks

Complexity, Change & Chance Events
Uncertainty, Young Industry, High Level Competition, Recruitment, Media Exposure
Appendix Interview Schedule

Demographics and Background
1. Can you please state your name/gamer ID, age, associated club, current employment and job role?
2. Retired? (Yes/No)
3. What is your highest educational qualification?
4. How many years of professional esports experience do you have/have you had?
5. What (other) job experience do you have prior to turning professional as an esports athlete?
6. How many clubs have you been with prior to the current one?

Career Entry
1. At what age did you get into esports?
2. What prompted you to start engaging with esports?
3. At what age did you turn professional?
4. How did you become professional?
5. Any particular influencing person and/or factor? (Prompt – schools, friends, parents)
6. Any events or results that particularly inspired you?
7. As a coach/manager, what are the qualities of an esports athlete you look for when you decide to select him/her as a professional? (Prompt - skills, characteristics) - where appropriate

Self-Reflections of Journey
1. What do you think are the differences between a professional esports athlete and amateur gamer?
2. What is your normal practice or work routine in your esports club?
3. Is there a norm (practice) for most people? A norm for other esports clubs as well?
4. What do you think are some of the essential qualities to succeed as an esports athlete?
5. Why do people dropout? What are the common reasons for dropping out?
6. What is the relationship like between you, your team members, your coach/trainee and your manager/CEO?

Motivations and Aspirations
1. What is your daily training routine like?
2. What is the most important event you have trained for? Any particularly memorable events?
3. Were there any impressive experiences that motivated (or are still motivating) you to train?
4. What motivates you to train or coach and stay in esports?
5. Do you have a role model that you look up to?
6. Do you treat this as a job? And why?

7. Is there any social stigma associated with this career?

8. If yes, what is it?

**Governance, Guidance and Support**

1. What are the challenges in your career?

2. What kind of support is there to deal with these challenges? (Prompt: from government, club, coach, teammates, parents, friends)

3. What do you think, in terms of policy, regulations and governance, can be improved?

4. Do you undertake any self-development training activities related to your career?

5. If yes, what are they? What is the purpose? Who are the providers?

**On the Industry**

1. What do you think of how the esports industry has developed, and where is it heading?

2. How do you feel about the business of esports livestreaming? (Prompt: fans culture, salary, importance, limitations)

3. When do you think you will retire and why? - where appropriate

4. Why did you retire as professional esports athlete? How did you feel? Any regrets? - where appropriate

5. What is your plan after retirement? - where appropriate