

Master's thesis

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Passion, grit, and mindset among female football players in Norway

Master's thesis in Psychology

Supervisor: Hermundur Sigmundsson

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Preface

This master's thesis marks the end of my five-year education, resulting in a Master of Science degree in psychology. The journey has been a roller coaster consisting of ups and downs. However, it has been an educational journey with a tremendous amount of learning and intellectual development.

I would like to thank my supervisor, Professor Hermundur Sigmundsson, for motivational conversations and counsels, and academic and helpful advice during the writing of the thesis. During this process, his enthusiasm and engagement have been valuable to me. I am grateful for the knowledge I have obtained because of this experience.

I would like to thank my friends for helping me through this process and always supporting me. Their support through my many write locks has been irreplaceable, and I am grateful for their patience and sympathy. I must direct an extra thankfulness to William and Ida for all the support throughout this long period. Without your faith in me, your presence, and positivity, this process would be a lot more troublesome. And to my wonderful family, thank you for all the love and encouragement.

Finally, thanks to all the participants for contributing to this study.

Abstract

Historically women in sports have been sidelined and given little attention compared to men. Most literature concerning sports and factors affecting performance in sporting contexts consists of male samples. Passion, grit, and mindset have previously been investigated in relation to performance among male football players. Thus, this study aimed to explore whether there were group differences in passion, grit, and mindset among female football players across the top series, 1. division, and 2. division. In addition, the study investigates associations between passion, grit, and mindset for the group as a whole and each of the three groups. The sample consisted of 55 participants in total, whereas all were women. Each participant was tested for the Passion Scale (Sigmundsson et al., 2020b), Grit-S (Duckworth et al., 2007), and the Implicit Theories of Intelligence Scale (ITIS-8) for mindset (Dweck et al., 1995). Pearson's correlation was conducted to examine the relationships between the factors. A multivariate analysis of variance was assessed to analyze differences in passion, grit, and mindset across the divisions. The analysis showed no significant findings, and revealed no effect of division on passion, grit, and mindset. Pearson's correlation showed significant correlations between passion and grit, and passion and mindset for the group as a whole. The group in the top series, had no significant correlations. For the group in 1. Division and 2. Division the correlation between passion and grit was significant. Based on the findings, possible explanations for the relationships, limitations, and implications have been presented and discussed. In sum, more research with different perspectives and samples is necessary to examine further the relations between passion, grit, and mindset across domains and groups to gain a greater picture of their relations and importance.

Keywords: Passion, grit, mindset, football, performance, female athletes.

Sammendrag

Historisk sett har kvinner innenfor idrett blitt marginalisert og gitt lite oppmerksomhet sammenliknet med menn. Majoriteten av litteratur om sport og faktorer som påvirker prestasjoner i sportslige kontekster består av mannlige utvalg. Lidenskap, grit og tankesett har tidligere blitt undersøkt i sammenheng med prestasjon blant mannlige fotballspillere. Av den grunn kommer denne studien til å utforske om det er gruppeforskjeller i lidenskap, grit og tankesett blant kvinnelige fotballspillere på tvers av grupper i topp serien, 1. divisjon og 2. divisjon. I tillegg undersøkes assosiasjoner mellom lidenskap, grit og tankesett for gruppen som en helhet og for hver av de tre gruppene. Utvalget besto av 55 deltakere totalt, hvor alle var kvinner. Deltakerne ble testet for lidenskap: the Passion Scale (Sigmundsson et al., 2020b), grit: the Grit-S (Duckworth et al., 2007), og the Implicit Theories of Intelligence Scale (ITIS-) for tankesett (Dweck et al., 1995). En Pearson's korrelasjonsanalyse ble gjennomført for å undersøke relasjonene mellom faktorene, og en multivariat variansanalyse analyserte gruppeforskjeller i score på lidenskap, grit og tankesett på tvers av divisjon. Variansanalysen indikerte ingen signifikante funn, som antyder at divisjon ikke har noen effekt på score i lidenskap, grit og tankesett. Person's korrelasjonsanalyse viste en signifikant korrelasjon mellom lidenskap og grit, samt mellom lidenskap og tankesett for gruppen som en helhet. Gruppen i topp serien hadde ingen signifikante korrelasjoner. For gruppene i 1. divisjon og 2. divisjon var korrelasjonen mellom lidenskap og grit signifikant. Basert på funnene har mulige forklaringer, begrensninger og anbefalinger for fremtidig forskning blitt presentert og diskutert. Mer forskning med ulike perspektiv og utvalg er nødvendig for å videre undersøke relasjoner mellom lidenskap, grit og tankesett på tvers av domener og grupper for å få et større bilde på relasjonene og deres betydning.

Nøkkelord: Lidenskap, grit, tankesett, fotball, prestasjoner, kvinnelige idrettsutøvere.

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Women entering sports became a revolutionary step into the public with the following statement “the female body is able to do more than give birth.” The notions, however, were often limited and adjusted versions of the male standard (Goksøyr, 2008, p. 71). During the 1930’s new sports began to enter Norway, such as handball, badminton, fencing, and orientation. The aforementioned sports were acceptable for women to participate in, but there was still an underlying scepticism surrounding women’s engagement. When it came to women participating in sports, the general opinion was that it should not be “unwomanly.” Sports that could be injurious to health or otherwise seen as unsavory, when performed by women, were therefore viewed as unsuitable for them (Goksøyr, 2008, p. 101; Olstad, 1987, p. 271).

Before the 1960s, women were marginalized in sports, and there was little attention both historically and in media. Despite the general belief that women should not exhaust themselves or be seen as tired or in a sweat, the consciousness about gender differences in sports became bigger around the 1970s. More women began to claim their position in different sports during this decade, like football (Goksøyr, 2008, p. 127; Goksøyr & Olstad, 2002). Norges Idrettsforbund declared “Idrett for alle” in the 1970s, making it hard to keep women out of sports. In 1976 football for all women was accepted by the Norwegian Football Association (NFA), an important stepping stone for developing the sport in Norway (Goksøyr, 2008, p. 127). Historically, women have dealt with multiple problems in sports, much like the problems Norwegian women have faced. Today, both women and men have gained the public’s attention, especially elite teams and elite players. However, how do these individuals achieve elite level, and how do they get there?

Individual differences have been of interest ever since the debate concerning nature versus nurture was established. The debate, which often questioned genes versus environment, has changed, and people are now trying to understand the interaction between the two. Gottlieb’s theory on development, the probabilistic epigenesis, is an example of that (Gottlieb, 1998). In probabilistic epigenesis, it is assumed that there is always an interaction between genes and environment, and therefore development is an outcome of both internal and external stimuli (Gottlieb, 1998). In Gottlieb’s probabilistic epigenesis, the importance of experience is highlighted as crucial for both development and learning. Both Gottlieb and Edelman assumed that genetics and the nervous system were essential for development and excellent performances (Gottlieb, 1998; Hopkins, 2014, p. 17). Typically, when talking about

excellent performance, we hear about innate abilities in relation to genes. Conversely, literature indicates that it takes more than just innate abilities and talent to become prominent and thereby reach higher goals. Other important factors such as passion, grit, and mindset are assumed to be something you develop (Ericsson et al., 1993).

What is the association between passion, grit, and mindset? Are they closely related, and does the association differ between divisions among female soccer players? Some studies have indicated gender differences in associations between passion, grit, and mindset (Sigmundsson et al., 2020a). Sigmundsson, Clemente, and colleagues (2020) explored the relationship between passion, grit, and mindset amongst football players; however, the study only included men. Whether there are significant relations between the mentioned factors among female football players is still to explore. Separately, grit has been found to be of importance for excellent performances and as a crucial factor across different domains (Duckworth, 2017; Duckworth et al., 2007; Duckworth & Gross, 2014; Duckworth & Quinn, 2009). Passion appears essential for individuals and gives them the drive to do what they want (Sigmundsson et al., 2020b; Vallerand et al., 2003). Further, mindset has been associated with motivation and achievement (Aditomo, 2015; Dweck, 2012).

In light of previous studies and findings, an all-female sample could be interesting to enhance diversity and perspective in the research on passion, grit, and mindset. Women in sports have historically been neglected; therefore, this approach could be a contribution to increase interest in female athletics. The following section will elaborate on the background for this study and introduce each factor of interest. This text will present a brief summary of the history surrounding women's football in Norway, England, and Brazil to cast a light on the similarities across countries. Next, prior literature about passion, grit, and mindset and the associations between the factors will be presented.

Theoretical Background

Women's Football

Women in Norway have traditionally been side-lined when it comes to sport, which is also the case for women in England. Media and studies dedicated to the history of football have largely been focusing on men. In addition to female football players being historically side-lined, they are also ignored, treated as lesser than men, and seen as unworthy of attention in more modern times (Dunn & Dunn, 2016). Some have attempted to show how women's football has developed at the same pace as men's football since the 19th century. However, women's football is claimed to be more about experience and fun than spectatorship and audience (Dunn & Dunn, 2016).

The European Championships in England in 2005 is a significant event in the history of women's football. Especially in England, new and better strategies began to shape elite women's football. Compared to the number of professional men, the number of professional women was low. The contrast between men and women in football began to show due to the international competitions and how poorly the women performed compared to the men's team (Dunn & Dunn, 2016). Years later, the narrative has changed. In England, there is now an increased number of professional female football players with contracts, the salary has been improved, and the players have access to professional facilities. The women's Super League (WSL) is, however, still side-lined in English football. The women receive support from FA and have a stable financial investment. Nevertheless, the public spectators and media are still focusing on men rather than the female football leagues (Dunn & Dunn, 2016).

According to Dunn and Dunn. (2016), it is argued that Norway and the United States were among the pioneers of woman's football. In some countries, women's football had higher status and more professional career options. However, the road to high status and professionalism was not necessarily easy for neither. As mentioned, the road to inclusion was long, difficult, and characterized by traditional gender roles where women were supposed to be feminine housewives (Goksøyr, 2008, p. 101; Olstad, 1987, p. 217). The 1970s may seem like the year that changed Norwegian football for women. However, it was almost 40 years without progress before that due to traditional views about whether women could engage in sports (Fasting, 2003, p. 159). After 1970 Norwegian women's football increased rapidly, both a Norwegian football championship and some private leagues were arranged (Fasting, 2003, p. 159). On top of that, during 1973, Norway Cup was established. This may have been one of the most important factors for girls' and women's football development.

As opposed to female football players in England, the Norwegian female football

players seemed to have excellent players both on the grassroots and elite levels. In 1987 the first national league was created. It consisted of the best teams in Norway, independent of where they were geographically situated (Fasting, 2003, p. 161). Furthermore, Norway became the first country that didn't distinguish between men and women to become talented players. Even so, female football players were never presented in the media as their male counterparts were. As the women's Norwegian national team improved, they gained attention from the media. Even though the women's national team has performed better than the men's team, the public attention has remained on the men's national team. (Fasting, 2003, p. 165).

Other teams that have coped with problems and have faced resistance are Brazil's female teams (Votre & Mourão, 2003, p. 264). Like Norway and England, women in Brazil have played football since the 1970s. Football was forbidden for women in Brazil until 1979. Only after that, the number of female football players increased. In line with the growth of female football players, their skills and organization advanced. On the contrary, the resources and support needed for further development did not exist. The clubs associated with female teams did not have the resources or enough money to expand their offers. Compared to England and Norway's teams, Brazil suffered from bigger economic problems. Their salary was low, and their expenses from transportation, clothing, shoes, and other items were something they could not afford at the beginning (Votre & Mourão, 2003, p. 266).

As the media in England, there was no interest when the Brazilian international tournament was to take place in 1985. The sport was standing still, and the development from amateur sport to professional stopped due to no promotion or attention (Votre & Mourão, 2003, p. 271). How this could be a problem in the country of football can for the general public be incomprehensible. The main struggle seemed to be that they didn't gain the same status as the male football teams. Moreover, some sectors in Brazil had conservative reactions to women's presence in areas reserved for men, like football fields and areas. On top of that, football was still considered as a sport that was too rough for women. Due to these mindsets and conservative opinions, women's football suffered from a slow development embossed with disappointments (Votre & Mourão, 2003, p. 271).

Passion

Passion is not a new concept, Spinoza (1632-1677) suggested that acceptable thoughts originated from reason, and unacceptable ideas derived from passion. This perspective on passion claims that individuals with passion are controlled by their passion and passively follow it (Vallerand et al., 2003, p. 756). During the same period, a second perspective on passion emerged. This perspective was more positive and saw individuals as active participants in their relation to passion. In contrast to Spinoza, René Descartes (1596-1650) defined passion as “strong emotions with inherent behavioural tendencies that can be positive as long as reason underlies the behaviour” (Vallerand et al., 2003). Hegel (1770-1831) suggested that passion was essential to reach higher levels of achievement. This perspective corresponded to Descartes's ideas of passion (Vallerand et al., 2003). During the 1900's the interest in passion increased, and different aspects in connection with it were explored. According to Frijda et al. (1991), individuals who wanted to reach their passionate goals tend to spend large amounts of time and effort to do so. Research in modern times has developed a more focused view on passion, mainly passion toward activities, and most recently, passion for achievement (Sigmundsson et al., 2020b; Vallerand et al., 2003).

Passion is often defined as “an intense desire or enthusiasm for something” (Oxford University Press, 2019). Generally, passion is said to be something that drives us. It could drive us to invest both energy and time towards a specific object or activity (Sigmundsson et al., 2020b). According to Sigmundsson et al. (2020b), passion might also lead to enthusiasm and cause people to become more connected to what they are interested in. In general, there are two views on passion that dominate: a dualistic approach and passion related to achievement (Sigmundsson et al. 2020b; Vallerand et al., 2003). Vallerand et al. (2003) presume that passion can be both healthy and unhealthy. First of all, they believe that the activity must be significant enough in a person's life for passion to occur. Secondly, they propose that passion developed for an activity can be either harmonious or obsessive, and therefore contribute or interfere with their basic needs (Vallerand et al., 2003). Stenseng (2008) supports Vallerand et al. (2003) and their perspective on passion as either healthy or unhealthy. Their dualistic approach to passion offers an understanding of passion and how it can positively or negatively impact one's identity.

Moreover, this approach proposes four essential elements of passion: liking the activity, time spent on the activity, activity valuation, and the internalization process

(Vallerand et al., 2003). The three first elements are usually common to both types of passion. The internalization process (autonomous vs. controlled), on the other hand, is the element that distinguishes between harmonious and obsessive passion ((Mageau et al., 2009). Vallerand et al. (2003) suggest that contextual and personal factors that influence the elements above might contribute to the development of passion.

Individuals with harmonious passion view the activity as important for them without any conditions attached to it. Their passion for the activity becomes a part of who they are. Individuals that play soccer, for example, are soccer players (Vallerand et al., 2003). This type of passion is an internalization that drives towards engagement and motivation. When the activity is freely chosen without overpowering their identity, one can say that their passion is harmonious. If their passion isn't in harmony with other aspects of their life, it could lead to stress and pressure. Typically, obsessive passion could have this type of impact on one's identity and life (Vallerand et al., 2003). Their theory suggests that obsessive passion can be associated with interpersonal or intrapersonal pressure. While harmonious passion is driven by desire and determination, obsessive passion may lead to engagement in an activity because it controls the person. Consequently, the activity tends to take up an inappropriate amount of time in one's life or identity and could cause internal conflicts (Vallerand et al., 2003). In connection to this, Stenseng (2008) proposes that harmonious passion and obsessive passion have different emotional consequences. Harmonious passion should lead to positive emotions, while obsessive passion could lead to negative emotions.

The history of passion has shown to be diverse and, the definitions of it have been fluctuating. Jachimowicz et al. (2018) defined passion as “a strong feeling toward personally important value/preference that motivates intentions and behaviours to express that value/preference.” This definition is inspired by previous conceptualizations of passion, including Vallerand et al. (2003). They propose that passion is domain-specific and involves intense affection, including negative and positive emotions (Jachimowicz et al., 2018). A meta-analysis in Jachimowicz et al. (2018) found passion moderating the relationship between performance and perseverance, which is in accordance with the view of passion as essential for high performance and achievement (Jachimowicz et al., 2018). Based on the definition presented by Jachimowicz et al. (2018), a new measure of passion was put forward. This conceptualization views passion as a unidimensional construct of motivation towards high achievement (Sigmundsson et al., 2020b). Thus, it is different from the dualistic model of Vallerand et al. (2003) and understands passion as a drive to reach high levels and become accomplished in a specific theme, area, or skill. Passion is not positive or negative but rather a

motive power (Sigmundsson et al., 2020b). According to studies including the Passion scale by Sigmundsson and colleagues (2020b), passion appears to be closely related to the constructs of grit and mindset (Sigmundsson 2021; Sigmundsson et al., 2020a; Sigmundsson, Clemente, et al., 2020).

The Passion Scale concerning harmonious and obsessive passion (Vallerand et al., 2003) has two components: two seven-item subscales that assess the relative importance of harmonious and obsessive passion, and a three-item scale that distinguishes between passionate and non-passionate individuals (Mageau et al., 2009). Recently, Sigmundsson et al. (2020b) explored the psychometric properties of a new scale that aimed to quantify passion. The new 8-item scale related passion to achievement in new areas, themes or skills. This scale was designed for simple administration, to be quantitative, and applicable for large-group testing (Sigmundsson et al., 2020b).

Grit

Grit is a construct that can be defined as “perseverance and passion for long-term goals” (Duckworth et al., 2007, p. 1087). It is divided into two components: perseverance of effort and consistency of interest over time (Duckworth & Quinn, 2009). Gritty individuals typically stay in course even when disappointment or boredom happens. They tend to work hard towards challenges while maintaining interest and effort over a more extended period of time. Gritty individuals keep going when others change course or give up (Duckworth et al., 2007). Grit has gained a lot of theoretical support over the years, yet, it has existed since the earliest days of psychology. During the late 1800s, Galton collected information concerning abilities and success. He emphasized that abilities alone did not lead to success and proposed that “self-denial” was an essential factor in that matter (Galton, 1869, in Duckworth & Gross, 2014). Today, “self-denial” is referred to as “self-control” and is often said to be the same as grit. However, Duckworth et al. (2007) propose that grit differs from self-control in its emphasis on stamina.

According to the theory of Costa McCrae (1992), the Big Five, self-discipline is a facet under the personality trait of conscientiousness. Even though grit has been said to differ from the construct self-discipline, a study shows that they are highly correlated $r = .6$ (Duckworth et al., 2007). Self-discipline, or self-control, has later been defined as “being a capacity to regulate attention, emotions, and behaviour in the presence of temptation” (Duckworth & Gross, 2014, p. 319). Another difference between the two constructs is their effect on goals, where grit might be related to higher goals than self-control (Duckworth &

Gross, 2014). Also, there have been found correlations between grit and personality traits. Duckworth and colleagues (2007) found in their study a correlation between conscientiousness and grit $r = .77$, $p < .001$. However, the correlations with the other traits were low compared to conscientiousness (Duckworth et al., 2007). Seemingly grit overlaps with the achievement aspect of conscientiousness but differs in perseverance or stamina of pursuing long-term goals (Duckworth et al., 2007). Based on the high correlations between grit and conscientiousness, some studies argue that grit could be a facet in the personality trait conscientiousness (Credé et al., 2017). Interestingly, grit can at times correlate negatively to neuroticism $r = -.38$. An argument for this could be that emotional stability is an important factor when pursuing long-term goals and being resilient towards setbacks and challenges (Duckworth et al., 2007).

Early on, Duckworth (2017) found that grit predicted higher levels of education, fewer career changes, and retention in the U.S. Military, West Point. The fascination around the fact that some individuals worked for years to get into prestige colleges or West Point and then “give up” when facing difficulties or complex challenges was a key factor when developing the Grit Scale (Duckworth, 2017, p. 10). Also, why some individuals accomplish more than others of equal intelligence was of interest to address further (Duckworth et al., 2007). While some traits seem more critical than others in particular settings and careers, Duckworth et al. (2007) suggested that grit is that one quality that is shared among those that are successful. A gritty individual will keep interest despite failure and plateaus in progress. They tend to keep their course when others give up or change their path (Duckworth et al., 2007). Others may say that these individuals have talent and tend to be surprised when those who seemed gifted at first did not end up in the upper end of their field. Similarly, Galton found that ability alone did not lead to success in any field. He, like Angela Duckworth, believed that ability had to be combined with the capacity to work harder than others (Duckworth et al., 2007).

Multiple studies involving grit point out its association with high achievement. Also, studies have shown that high scores in grit could be associated with lower chances of dropping out than those with low grit-score (Duckworth et al., 2007). As some individuals depend on the level of challenge when developing skills or higher achievement, gritty individuals will continue their work and try to reach their goals even if the level of challenge is suboptimal (Duckworth & Quinn, 2009). Grit has also shown an association with happiness, and some studies suggest that gritty individuals are more likely to seek happiness through engagement than less gritty individuals (Von Culin et al., 2014). Their study assumed that lower grit scores were correlated to pleasure and therefore led to losing interest over time.

However, the association between grit and engagement was driven by the perseverance of effort. Consequently, they argued that engagement might promote grit (Von Culin et al., 2014).

Duckworth et al. (2007) assumed that grit could be as important as IQ to high achievement. IQ tests are often recommended to test intelligence or general mental capacity. However, multiple studies indicate that IQ might not be the best measure for success or achievement. While IQ is important, it appears to be an underlying factor for success. Students who scored higher on the grit scale than their peers also showed higher GPA results (Duckworth et al., 2007). In that matter, grit might be the tenacity and resoluteness which conduce to success and higher achievement. On that note, Duckworth and colleagues (2007) created a scale that measured an individual's level of grit. The Grit Scale, or Grit-O, was developed as a self-report questionnaire. The scale consisted of a two-factor structure with 12 items, which compromised stamina in both perseverance of effort and interest over time (Duckworth & Quinn, 2009). The Grit Scale measured grit with a 5-point Likert scale. Later, Duckworth and Quinn (2009) developed a shorter version of the original Grit Scale. This scale, the Grit-S, was meant to be a more efficient measure. Grit-S consists of the same two-factor structure as the Grit-O but has fewer items and improved psychometric properties. The number of items was reduced from 12 to 8, with four items per subscale (Duckworth et al., 2007). Duckworth and Quinn (2009) presented evidence for test-retest stability, consensual validity, internal consistency, and predictive validity for the Grit-S. Both scales measure the consistency of interest and perseverance of effort, with a correlation of $r = .96$ (Duckworth & Quinn, 2009).

Mindset

In this thesis, mindset will be viewed from positive psychology. Yet, it is important to note that mindset has several conceptualizations. If we look at cognitive psychology, a mindset can be understood as the sum of active cognitive processes during a given task (French, 2016). However, in positive psychology, Dweck (2012) defines mindset "as a set of beliefs of our own attributes." According to Dweck (2016), there are two types of mindset: growth mindset and fixed mindset. A growth mindset is a belief that talent isn't "set" and that through deliberate practice and support from others, they can develop. On the contrary, some believe that talents are innate and often consider them as a gift. Individuals with this mindset tend to achieve less and have a fixed mindset (Dweck, 2016). Typically, individuals with a growth mindset tend to worry less about what others think about them and spend more time

and energy on learning, according to Dweck (2016).

Due to an increase in research on mindset, there are still some misconceptions concerning the concept. Some believe that they have always had a growth mindset. However, a growth mindset is not something you have. A pure growth mindset is generated through action and effort (Dweck, 2016). To stick with the idea that a growth mindset will lead to achievements requires risk-taking and willingness to develop. Some might confuse growth mindset with other qualities like being open-minded or flexible, which are good qualities, but not the same as growth mindset (Dweck, 2016). Like many other psychological factors, growth mindset is not an independent factor. According to Dweck (2016), support and opportunities are important elements for progress. Also, she claims that rewards matter, both as motivation and for reaching goals. Research has shown that mindset does play a key role in both motivation and achievement. Whereas fixed mindset has been linked with vulnerability to negative feedback and helplessness (Dweck et al., 1995; Mangels et al., 2006), growth mindset has been associated with well-being and endurance when meeting challenges (Dweck et al., 1995; Howell, 2016).

Research concerning mindset has mainly been done using questionnaires and self-report measures. However, recent studies have tried to see if mindset has any associations with different brain areas (Ng, 2018). These types of neuroscientific studies could be an important contribution to the already existing questionnaires. According to Ng (2018) and the neuroscientific findings in their study, growth mindset is associated with the particularly anterior cingulate cortex (ACC), a part of the dorsal regions of the brain. ACC is related to learning and control, and growth mindset seems to be related to both dorsal and ventral striatal connectivity with dorsal ACC (Myers et al., 2016). Further, Ng (2018) found that both growth mindset and intrinsic motivation were related to ACC and ventral stratum. Intrinsic motivation has been found to be associated with mid-brain regions as well. Next, Ng (2018) claimed that individuals with a growth mindset could be more efficient in error-monitoring and handle corrective feedback in a good manner. Moser et al. (2011) had the same assumptions about individuals with a growth mindset and their ability to handle corrective feedback. This type of biological focus and neuroscientific approach could contribute with valuable information next to the already existing questionnaires and self-report measures.

Relationships Between the Factors

As demonstrated above, several studies have implied the importance of passion, grit, and mindset in relation to success, high achievement, and persistence. The next section will

investigate the associations between the factors and how they are related to performances across different fields. Studies including factors such as passion, grit, and mindset have increased over the years. Their connection with motivation, engagement, achievement and higher performances has been investigated among different studies and domains. Most commonly, the factors are used in academic contexts or learning environments such as schools and universities. Yet, the role of the different factors has proven to show mixed results across different studies and fields.

Passion, grit, and mindset

According to Dweck and Duckworth, grit and growth mindset are essential factors to achievement, learning, and success (Hochandel & Finamore, 2015). Traditionally, academic institutions tend to use intelligence tests and scores to predict achievement. However, that only reflects one's inborn abilities for learning and success. Grit and growth mindset seem to improve individuals' achievement. A growth mindset could contribute to persistence, thus become grittier and overcome challenges they face. Duckworth suggests that by having a growth mindset, grit could develop. As a result, one becomes more persistent and changes their thoughts about intelligence being fixed (Hochandel & Finamore, 2015). Both grit and growth mindset appear to facilitate long-term goals and could be factors that contribute to great performances and achievement. For instance, Albert et al. (2019) found that athletes who endorsed growth mindset and believed that ability was malleable and could be improved through hard work reported higher grit levels. On the contrary, fixed mindset did not positively predict athletes' level of grit (Akin & Arslan, 2014; Albert et al., 2019).

Grit and mindset have over multiple studies shown their relevance to one another. However, whether grit is a function of growth mindset or whether a growth mindset is a function of grit is still to be answered (Polirstok, 2017). They are important for learning and adapting different strategies to improve performance and willingness to take academic risks early at school, students may be more well-equipped. Teachers can contribute to their development to better learning by implementing strategies, like behaviour strategies, cognitive strategies, or technological strategies to help strengthen students and how they see themselves as learners (Polirstok, 2017). Polirstok (2017) assumes that students believe in themselves and become more successful learners by implementing such strategies. Also, students may be grittier and develop a growth mindset. By having this focus from a young age and developing grit and mindset among students, their learning ability and faith in their strengths may be greater. Next, adolescents could have a greater chance to become successful

and give those on the cusp of failure a chance to achieve their goals (Polirstok, 2017).

Further, Akin and Arslan (2014) found grit positively related to learning-approach goal orientations and negatively related to performance goal orientations. While it's important to implement learning strategies and help students achieve their goals, their approach to learning is also important. Students eager to learn new skills, improve their understanding and competence, and keep on going despite failure have a so-called learning-approach goal orientation. This type of orientation is, as mentioned, positively related to grit. Learning-approach goal orientation has also shown relation to motivation advantages (Akin & Arslan, 2014). On the contrary, performance-approach goal orientation has been positively related to the absence of grit, increased anxiety, and other maladaptive behaviours (Akin & Arslan, 2014).

Similar to grit, mindset has also demonstrated relations to motivation, goals, and effort. A fixed mindset is assumed to predict helplessness attributions, poorer self-reported grades, and fewer academic goals. Next, fixed mindset were predictive of disengagement and self-handicapping. In contrast, growth mindset is likely related to motivation and engagement (De Castella & Byrne, 2015). Furthermore, mindset could seem to buffer against demotivation in the face of setbacks and lead to better achievements (Aditomo, 2015). A growth mindset about academic ability encouraged the adoption of effort attribution and mastery goals. Hence, this buffered against demotivation in the face of academic setbacks and lead to better academic achievement (Aditomo, 2015). However, Yu and McLellan (2020) found four distinct mindset profiles in their study, where the students' mindset varied with mastery goals, effort believes, self-handicapping, and perseverance. In addition to the traditional view on growth mindset and fixed mindset, two profiles displayed other combinations; growth-competitive and disengaged. Those with a growth-competitive mindset embraced both mastery goals and performance goals, and the results showed that they even outperformed the students with a traditional growth-focused mindset. Those with a disengaged mindset did not endorse performance goals, like others with a fixed mindset tend to do (Yu & McLellan, 2020)

In academic settings, both growth mindset and grit have demonstrated their importance. Their relevance in sport has also been explored in different studies. Albert et al. (2019) investigated the relationship between grit and psychosocial factors such as mindset, goal orientation, and motivational climates. Their results revealed that athletes' growth mindset and task goal orientation related to their grit level. Interestingly, their study presented findings that different goal orientations, task-orientated or ego orientated, mattered to how

gritty the athletes were. However, the task-involving motivational climate was not a significant predictor of grit, contrary to their prior beliefs (Albert et al., 2019).

Grit has also been associated with deliberate practice in sport (Tedesqui & Young, 2017). Their findings suggest that perseverance of effort predicted weekly amounts of deliberate practice and engagement in both optional and mandatory practice contexts. Conversely, consistency of interest showed associations with threats to athletes' sport commitment (Tedesqui & Young, 2017). The study supports the assumptions about gritty individuals and how their hard work toward long-term goals enables them to persist with their activity engagement (Duckworth et al., 2007; Duckworth & Quinn, 2009; Hocandel & Finamore, 2015). Further, others have revealed that grittier athletes tend to spend significantly more time in sport-specific activities, such as training, competitions, and indirect involvement (Larkin et al., 2016)

Mostly, grit has been associated with solely beneficial outcomes and as a positive trait. However, some studies indicate that grit also comes with drawbacks. While individuals with a low level of grit tend to give up when tasks are too complicated or meet failure, being gritty can also have disadvantages. Some studies imply that grit could lead to harmful outcomes (Lucas et al., 2015). It seemed that grittier individuals not only persisted at a cost to themselves, but they also managed fewer tasks than those who are not so gritty. Additionally, grittier individuals were more likely to keep fighting a losing battle when they could quit and increased their effort when they lost a game (Lucas et al., 2015). Even though gritty individuals don't seem to suffer from this handicap. Their inclination to persevere on more difficult problems over completing many problems does not seem to impact their ability to succeed (Lucas et al., 2015). Furthermore, gritty individuals seem to surpass less gritty individuals in education and employment settings (Duckworth, 2017; Duckworth et al., 2007).

Mindset has also shown how it can be both beneficial and harmful, depending on whether individuals hold a growth mindset or a fixed mindset (Dweck et al., 1995; Dweck, 2012; Dweck, 2016). In association with high achievement and excellent performances mindset among gifted students in China have been examined. They were classified as non-perfectionists, healthy perfectionists, and unhealthy perfectionists. According to the study, those who were unhealthy perfectionists scored the highest on the measure of fixed mindset (Chan, 2011). The characterization of the unhealthy perfectionists mentions how they are occupied with avoiding mistakes and don't feel that their efforts are good enough (Chan, 2011), similarly to how those with a fixed mindset might evaluate themselves and their performance. In contrast, healthy perfectionists seemed to score higher on the measure of

growth mindset (Chan, 2011).

Given the above, grit and mindset could lead to both harmful and beneficial outcomes. Equally, the traditional view on passion as harmonious or obsessive could contribute to similar outcomes (Mageau et al., 2009; Vallerand et al., 2003). The two types of passion distinguish from each other in how they internalize one's identity. Harmonious passion develops through an autonomous internalization of an activity. The individual sees the activity as important to them and accepts its internalization in their life and identity (Vallerand et al., 2003). The internalization contributes to a motivational force and a willingness to pursue the activity. With harmonious passion, individuals freely chose to engage themselves and spend their time voluntarily. Additionally, individuals with this type of passion spent time on activities, in a matter where it's in harmony with other aspects of their lives (Vallerand et al., 2003). Conversely, obsessive passion has a more controlled framework, and internalization originates from intrapersonal and interpersonal pressure. These feelings and contingencies are what drives the person to continue the activity engagement. The individuals' engagement is not elective, as those with harmonious passion have. In connection to this, the individual continues to be engaged and committed as the activity controls the person (Vallerand et al., 2003). Further, the activity tends to take disproportionate space in the person's life and identity, leading to conflicts with other aspects and activities in the person's life (Vallerand et al., 2003).

Most of the population is moderately passionate about an activity during their lifespan (Stenseng, 2008; Vallerand et al., 2003). Individuals tend to spend many hours per week over several years dedicated to a specific activity. Therefore, such passion seems to be persistent. Even though harmonious passion and obsessive passion seem to have different internalizations to ones' identity and life, they both have been found to positively predict the engagement in demanding task activities, such as deliberate practice (Vallerand et al., 2007; Vallerand et al., 2008). A study found that only harmonious passion predicted long-term persistence in an activity. On the contrary, obsessive passion positively predicted maladaptive outcomes (Bonneville-Roussy & Bouffard, 2015). However, harmonious passion seems to protect against negative outcomes (Mageau et al., 2011).

Both harmonious passion and obsessive passion can be associated with persistence, and their internalization into one's identity appears to affect differently. On the one hand, harmonious passion is associated with autonomy and will. Individuals will be able to quit the activity if it becomes harmful or leads to negative outcomes. On the other hand, obsessive passion is expected to lead to continued engagement because the activity controls the person

(Vallerand et al., 2003). While persistence is important to success and performance, positive and healthy engagement is equally important. It follows that persistence itself will not develop new skills. Activity engagement without positive outcomes or results will most likely not give greater achievements. Although, athletes who dedicate their whole life stay persistent in the activity to reach higher goals or results like the Olympics (Ericsson et al., 1993). Hence, obsessive passion could be a requirement to become a professional athlete. However, since obsessive passion may lead to engagement no matter the circumstances, such persistence might lead to physical injuries or mental staleness that potentially could harm optimal performance (Vallerand et al., 2003). Because harmonious passion could lead to a more flexible psychological state that enhances better focus, less anxiety, and pressure, it might still lead to equally high levels of achievement and performance. Also, the risk of physical injuries is less likely (Vallerand et al., 2003).

Moreover, feedback and learning styles are crucial to developing passion (Bonneville-Roussy et al., 2013). Their study presented findings that claimed that those who perceived autonomy support from their teachers developed a more harmonious passion. While those who perceived control tended to develop a more obsessive passion (Bonneville-Roussy et al., 2013). Additionally, Ericsson et al. (2007) proposed that when students reach a certain level, their ability to know which advice works for them and how teachers challenge them to become better will develop. When developing skills, the activity itself should be the reason to practice, also autonomy is of importance. It could be hard to strive to be better if a teacher controls everything, and their own opinions are left out (Ericsson et al., 2007). Furthermore, another study found that supportive environments for children and teenagers could be beneficial for their autonomy and the development of harmonious passion. Further, their results showed that those children and teenagers who valued activity specialization highest and relied on their activity for self-definition were more likely to develop an obsessive passion (Mageau et al., 2009).

In recent years, the relation between grit and passion has briefly been explored. One study argued that passion matters to students' perseverance and consistency in their interests and personal goals (Verner-Filion et al., 2020). Harmonious passion is assumed to cause the pursuit of multiple goals with a non-conflicting approach. Thus, engagement and persistence in long-term goals might be perceived as harmoniously integrated (Verner-Filion et al., 2020). However, obsessive passion brings a conflicting approach when perceiving multiple goals simultaneously. Individuals with an obsessive passion might see multiple goals as incompatible and interfering. Therefore, it could lead to a diminished sense of perseverance

and interest towards the goals over time (Verner-Filion et al., 2020). Verner-Filion et al. (2020) suggest in their study that passions are not created equal and don't necessarily lead to healthy long-term goal pursuit. Further, their findings argue that the two types of passion should be distinguished and an understanding of how they can fuel, or hinder, one's perseverance and interest toward long-term goals. The research proposes that the dualistic model of passion and literature on grit conceptualizes passion differently. Literature on grit uses passion as the consistency of interest and how that is one's capacity to stay in course and not change one's long-term goals and interests. On the contrary, the dualistic approach on passion argues that passions are important activities integrated with one's identity (Verner-Filion et al., 2020).

Passion and grit have also been explored in the field of business. Mueller and colleagues (2017) investigated the importance of grit and its associations with passion. They found that passion is differentially related to grit. Passion seemed to be indirectly, but negatively, related to grit through regulatory assessment mode. Also, passion had an indirect and positive relation to grit through locomotion regulatory mode (Mueller et al., 2017). Their study presents findings that yield a picture of how passion influences grit, hence their performance. Next, their results provide evidence that passion can lead to grit. Even so, Mueller et al.'s (2017) findings also emphasize that passion could lead to different pathways and hinder one's capacity and will to pursue long-term goals.

Preceding research has indicated that passion, grit, and mindset are important factors for higher performance and achievement (Duckworth, 2007; Dweck, 2016; Ericsson et al., 2007; Sigmundsson et al., 2020b; Vallerand et al., 2003). As a result, the interest of the given factors and their associations with one another have been further investigated. According to Sigmundsson and colleagues' (2020a) study on young adults, grit and passion had the highest relation ($r = .435$) between the three of them for the group as a whole. Equally to other studies, they propose that passion could be the factors that drive individuals to higher performance and achievement. The same study found that grit and mindset had a significant relationship ($r = .274$), which implies that growth mindset might affect the development of grit (Sigmundsson et al., 2020a). These results support previous findings in other studies (Albert et al., 2019; Hochanadel & Finamore, 2015; Polirstok, 2017). Passion and mindset had the lowest correlation ($r = .260$), which might suggest that their correlation is not very strong (Sigmundsson et al., 2020a). Interestingly, their results show gender differences in associations between passion, grit, and mindset. Both males and females had significant

correlations between passion and grit, and passion and mindset. However, the correlation between grit and mindset was not significant for the male group (Sigmundsson et al., 2020a).

Additionally, Sigmundsson (2021) explored the relationship between passion, grit, and mindset among men and women in the ages 14 to 77. This study examined the relationship between the factors across the life span, and results for the group as a whole found significant relations between passion and grit ($r = .325$), passion and mindset ($r = .166$), and grit and mindset ($r = .167$). As opposed to Sigmundsson et al. (2020a), there were no differences between the significant correlations for the male and female groups. However, the strength in the significant correlations varied (Sigmundsson, 2021). There were some differences in which factors were significant for the age groups and how strong the correlations were. The correlations between passion and grit were significant for the three youngest groups, yet only the two youngest had a significant correlation between passion and mindset (Sigmundsson, 2021). This paper brings findings that potentially could be important to understand the factors and their relations over a life span better.

Sigmundsson, Clemente, et al. (2020) explored the relationship between passion, grit, and mindset with male football players. Equally to Sigmundsson et al. (2020a), they found significant relations between passion and grit ($r = .576$) for the group as a whole. The relationships between passion and mindset, and grit and mindset differed from the findings of Sigmundsson et al. (2020a). For the group as a whole among the football players, grit and mindset were found significant ($r = .271$). Conversely, the relation between passion and mindset was found not to be significant (Sigmundsson, Clemente, et al., 2020). Further, their study investigated whether there were differences in the relationship between the factors across different groups (elite, junior 18, and junior 15). All the groups showed significant relations between passion and grit. While Junior 18 was the only group with a significant relationship between grit and mindset. This group was also the most successful, playing in the Champions League for Junior teams, so the correlation may not be surprising considering previous studies and findings (Sigmundsson, Clemente, et al., 2020).

The Aim of the Current Study

In the current study, 55 female football players were tested in passion, grit, and mindset. This study will investigate if there are relationships between these factors. I will be exploring if the correlation between passion, grit, and mindset differs among the female teams between different divisions in Norwegian football. Several studies indicate associations between passion, grit, and mindset across multiple fields like academics, sports, and business

(Mueller et al., 2017; Sigmundsson et al., 2020a; Sigmundsson, Clemente, et al., 2020).

Considering that much research done on the mentioned factors and sports have used male participants, more research is needed with female samples. This study will use female participants to contribute to diversity within research on passion, grit, and mindset. Further, the history of women's football development is characterized by little attention compared to men's football. Therefore, this will be a contribution to shed light on female athletics.

Thus, based on previous findings, two research questions for the current study are proposed:

1. Whether there are group differences in passion, grit, and mindset across three divisions among female football players in Norway.
2. What are the associations between passion, grit, and mindset for the group as a whole and each of the three groups.

Method

Participants

The participants indicated their age, gender, and educational level. They also reported which division their football team played in. The sample consisted of 55 female football players in Norway. Their mean age was 20,11 ($SD = 4.44$), and the overall range was 14 to 37 years. The participants were in three groups: top division, their mean age was 23,7 ($SD = 5.53$); 1. Division, their mean age was 20,5 ($SD = 2.56$), and 2. Division, their mean age was 16,2 ($SD = 1.47$). Considering that this study aimed to examine differences in passion, grit, and mindset among female football players, there were no male participants. 49 participants took the survey in Norwegian, and 6 used the English version as some of the players didn't have Norwegian as their first language.

Procedure

The project did not gather sensitive information from the participants and did not need authorization from The Norwegian Data Protection Authority (NSD) based on the guidelines. Recruitment was conducted among professional and semi-professional female football players across the country. Due to limited time and resources, a convenience sampling method was used when recruiting participants within this group. This was mainly done by sending out mails to different football clubs of interest and reaching out to trainers and contacts of mine. Initially, participants were supposed to do the survey in paper form. However, due to COVID-19, the surveys were conducted digitally through <http://nettskjema.no>. Before starting the test, the participants were presented with information about the survey and how the participation was voluntary (See Appendix 1). They were also informed that it was anonymous and how they could contact the person in charge of their answers and the information they gave. The participants were tested on the Passion scale, Grit scale, and Mindset scale.

Tests

Passion

This study used an English and a Norwegian version of The Passion scale (Sigmundsson et al., 2020b) to assess participant's level of passion (See Appendix 2). The scale consists of eight items with a 5-point Likert scale going from 1= *Not like me at all* (Ikke typisk meg i det hele tatt) to 5 = *Very much like me* (Veldig typisk meg). The lowest score on this scale is 1 (not passionate at all), and the maximum score is 5 (extremely passionate). The

items measuring the participants' passion related to achievement in new areas or skills, e.g., “*I think I could be an expert in one area/theme/skill*” (Jeg tror jeg kan bli ekspert i et område/emne/ferdighet), “*I work hard enough to fulfill my goals*” (Jeg er arbeidsom nok til å oppfylle mine mål) and “*My passion is important for me*” (Min lidenskap er viktig for meg). The Passion scale has demonstrated acceptable internal consistency with Cronbach's alpha of $\alpha = .86$. The scale also showed good test-retest reliability with an Intraclass correlation coefficient (ICCs) between test and retest scores was 0.92 (Sigmundsson et al., 2020b).

Grit

The Grit-S scale was used to assess participant's level of grit. Both the Norwegian (Sending, 2014) and English version of the 8-item short grit scale developed by Duckworth and Quinn (2009) was used (See Appendix 2). The Grit-S scale is recommended over the Grit-O due to its improved psychometric properties and simplicity (Duckworth & Quinn, 2009). The scale consists of two subscales, Consistency of Interest and Perseverance of Effort. The items are rated on a 5-point Likert scale from 1 “*Ikke meg i det hele tatt*” (Not at all me) to 5 “*Veldig typisk meg*” (Very typical me). The lowest score is 1 (not at all gritty), and the maximum score is 5 (extremely gritty). The subscales have a correlation of $r = .96$, and Consistency of Interest has demonstrated acceptable internal consistency with Cronbach's alpha ranging from .73 to .79. For Perseverance of Effort, the internal consistency is lower, with Cronbach's alpha ranging from questionable ($\alpha = .60$) to acceptable ($\alpha = .78$) (Duckworth & Quinn, 2009).

Using a parallel blind technique, Sending (2014) translated Grit-O and Grit-S to Norwegian. There was a strong correlation ($r = .89$) between the English and Norwegian responses of bilingual respondents. The Norwegian version showed the same relationship between Grit-S and Grit-O ($r = .96$) as the English version. The Norwegian and English Grit-S includes items such as “*Jeg mister ikke motet ved tilbakegang/motgang*” (Setbacks don't discourage me), “*Jeg er arbeidssom*” (I am a hard worker) and “*Jeg fullfører alt jeg påbegynner*” (I finish whatever I begin).

Mindset

Both the English and Norwegian versions of the Implicit Theories of Intelligence Scale (ITIS-8) was used to measure participants' mindset (See Appendix 2). The items are rated on a 6-point Likert Scale, ranging from 1 “*Svært enig*” (Strongly agree) to 6 “*Svært*

uenig” (Strongly disagree). There are four items used to measure participants’ entity theory (i.e., fixed mindset), such as “*Intelligensen din er noe ved deg som du ikke kan endre særlig mye*” (Your intelligence is something about you that you can’t change very much). These items concern the belief that intelligence is fixed and something that cannot change. To measure incremental theory (i.e., growth mindset) four items focus on the belief that intelligence is changeable, e. g., “*Hvor intelligent du er, er noe du alltid kan endre betraktelig*” (You can always substantially change how intelligent you are). To get a meaningful score, the incremental scale items are reversed in this study. After summing up the items, the average score indicates whether they have incremental beliefs about intelligence (Dweck, 2000; Bråten & Strømsø, 2004). The scale has good test-retest reliability ($r = .80$) and internal consistency ($\alpha = .85$). Also, the scale shows good construct validity (Dweck et al., 1995). The Norwegian version of the scale has shown reliability with Cronbach’s α of .88 for incremental items and .86 for entity items (Bråten & Strømsø, 2004).

Statistical Analysis

For the statistical analyses, SPSS version 25.0 for Windows was used. Descriptive statistics in the form of mean and standard deviation were attained to examine the average scores for the variables of interest. A two-way repeated-measures ANOVA was conducted to extract visual mean scores of passion, grit, and mindset among the different groups (Figure 1.). Pearson product-moment correlation was used to investigate possible associations between division and passion, grit, and mindset. Pearson’s r was chosen as correlation method because the factors of interest were continuous (Field, 2013). The split-file command was conducted to explore correlations between passion, grit, and mindset in separate groups with division as the grouping variable. Lastly, a multivariate analysis of variance was conducted to analyse the difference between the three factors related to division. Statistical significance was set to $p < .05$.

Results

Descriptive statistics were derived for the whole sample and the different divisions. Table 1 shows the mean and standard deviation of the scores for the group as a whole; the top series, 1. Division and 2. Division. The top series has the highest mean score in passion and grit according to the results. The results imply that the group in 1. Division has the highest mean score concerning mindset.

Table 1

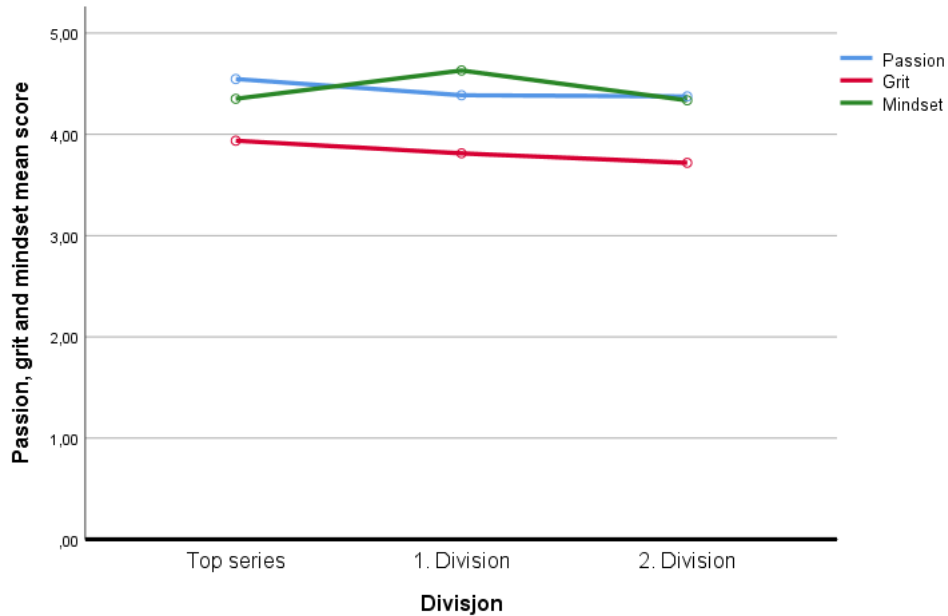
Mean and standard deviations for passion, grit, and mindset for the group as a whole, in the top series, 1. Division and 2. Division.

	Group as whole (N = 55)		Top series (N = 16)		1. Division (N = 23)		2. division (N = 16)	
Variables	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)
Passion	4.43	(.559)	4.55	(.502)	4.39	(.472)	4.38	(.722)
Grit	3.83	(.459)	3.94	(.266)	3.83	(.398)	3.72	(.654)
Mindset	4.46	(.679)	4.35	(.668)	4.62	(.614)	4.34	(.769)

For an overview over mean scores in passion, grit, and mindset among the different divisions, see Figure 1.

Figure 1

Passion, grit, and mindset mean score in the top series, 1. Division and 2. Division.



A Pearson's product-moment correlation was conducted to examine the correlations between passion, grit, and mindset for the group as a whole, in the top series, in 1. Division, and in 2. Division. The results for the group as a whole are presented in Table 2. Some of the assumptions concerning the correlation analyses were met, such as the independence between the factors. The scatterplot matrix revealed that the factors had a linear relationship; hence, linearity was met. However, passion and grit violated the assumption concerning normality, which could affect the test statistics and p-values and their accuracy (Field, 2013).

Group as a whole

When examining the correlations for the whole group ($N = 55$), the results of the Pearson correlation indicated that it was a strong, significant positive correlation between passion and grit ($r = .580, p < .01$). There also was a small, significant positive correlation between passion and mindset ($r = .269, p < .05$). The correlation between grit and mindset was not significant ($r = .197, p = .150$).

Table 2*Pearson's Correlation between passion, grit, and mindset for the whole group (N = 55).*

	1	2	3
1. Passion	1	.580**	.269*
2. Grit		1	.197
3. Mindset			1

*Note. *p < .05, two-tailed. **p < .01, two-tailed.***Top series**

There were no significant correlations between passion and grit ($r = .242, p = .367$), passion and mindset ($r = .348, p = .186$), and no significant correlations between grit and mindset ($r = .167, p = .537$) in the top series ($N = 16$). The findings are presented in Table 3.

Table 3*Pearson's Correlation between passion, grit, and mindset for the top series (N = 16).*

	1	2	3
1. Passion	1	.242	.348
2. Grit		1	.167
3. Mindset			1

*Note. *p < .05, two-tailed. **p < .01, two-tailed.***1. Division**

It was a strong, significant positive correlation between passion and grit ($r = .504, p < .05$) for 1. Division ($N = 23$). The Pearson correlation indicated that there was no significant correlation between passion and mindset ($r = .282, p = .204$), and no significant correlation between grit and mindset ($r = .249, p = .252$). (See Table 4.)

Table 4*Pearson's Correlation between passion, grit, and mindset for the 1. Division (N = 23).*

	1	2	3
1. Passion	1	.504*	.282
2. Grit		1	.249
3. Mindset			1

*Note. *p < .05, two-tailed. **p < .01, two-tailed.***2. Division**

The results for 2. Division (N = 16) found a strong, significant positive correlation between passion and grit ($r = .721, p < .01$). The correlations between passion and mindset ($r = .267, p = .318$), and grit and mindset ($r = .196, p = .466$) were not significant. (See Table 5.)

Table 5*Pearson's Correlation between passion, grit, and mindset for the 2. Division (N = 16).*

	1	2	3
1. Passion	1	.721**	.267
2. Grit		1	.196
3. Mindset			1

*Note. *p < .05, two-tailed. **p < .01, two-tailed.***Between-group differences**

A multivariate analysis of variance was conducted to explore whether the null hypotheses saying that there are no between-group differences could be rejected. The assumptions for independence, multivariate outliers, linearity, homoscedasticity, and multicollinearity were met. The Shapiro-Wilk of normality revealed that passion and grit violated the assumption concerning multivariate normality. The factors had skewed distributions that deviate from normal (Field, 2013).

Using Wilks's lambda, there was a non-significant effect of division on passion, grit, and mindset, $\Lambda = 0.907, F(6,98) = .816, p = .560$. Separate univariate ANOVAs on the outcome variables also revealed non-significant effect of division on passion, $F(2, 51) = .484, p = .619$, grit, $F(2, 51) = .912, p = .408$, and mindset, $F(2, 51) = 1.152, p = .324$.

Because the finding was non-significant, the null hypotheses could not be rejected, and one can assume that there are no between-group differences in this study.

Discussion

The scales for passion, grit, and mindset were administered to 55 female football players within the top series, 1. Division, and 2. Division in Norway. This study explores group differences in passion, grit, and mindset across three divisions among female football players in Norway. A multivariate analysis of variance found no significant effect of division on passion, grit, and mindset. Hence, the analysis indicates no differences in passion, grit, and mindset across the divisions. Furthermore, the study examined associations between passion, grit, and mindset for the group as a whole and each of the three groups. The overall results concerning associations between the factors found significant correlations between passion and grit ($r = .580$) and between passion and mindset ($r = .269$) for the group as a whole. In the top series, none of the correlations were significant. In 1. Division the correlation between passion and grit was significant ($r = .504$). The correlation between passion and grit was also significant for the group in 2. Division ($r = .721$). While passion and mindset correlated for the group as a whole, low but non-significant correlations were found within the divisions separately.

The relationships in the group as a whole

Research has indicated that passion, grit, and mindset are important for the development of skills, expertise, and knowledge (Duckworth 2017; Dweck 2016; Ericsson et al., 2007; Sigmundsson et al., 2020b). The results in this study found a significant correlation between passion and grit ($r = .580$) which is a moderate correlation (Cohen, 1992). Passion and mindset ($r = .269$) had a low significant correlation for the group as a whole. In line with prior research and these results, passion and grit appear to be important as isolated factors, but they complement each other. They seem to be intertwined in connection to achievement. Sigmundsson et al. (2020b) visualized the connection as an arrow, where passion is the direction to an area, theme, or skill, while grit is the strength and size of the arrow. If passion is the direction to become an expert, growth mindset might be the buffer that keeps individuals on the right track to achievement. Growth mindset has been claimed to be a buffer against demotivation (Aditomo, 2015). Therefore, the correlation between passion and mindset might matter to achieve desired goals and ambitions.

Previous findings have suggested that the relationship between passion and grit is essential to perseverance and consistency in ones' interests and personal goals (Verner-Filion et al., 2020). The findings in this paper are consistent with this suggestion. Verner-Filion and

colleagues (2020) investigated the relationship between passion and grit among students, while this study examines the relationship among football players. On that note, it appears that the relationship between passion and grit is essential across different fields like academics and sports. This indicates that passion and grit are important when seeking successful outcomes, such as good grades or great athletic performances. The findings are in accordance with Sigmundsson et al. (2020b) model proposing passion and grit as important factors if one is striving to become an expert. Further, the findings support Ericsson and Pool (2016) and their view on what makes an expert.

The relationship between passion and grit ($r = .580$) is similar to the findings in another study exploring the relationship between the factors among young adults, with a mean age of 22.01 (SD = 5.21). For the group as a whole, grit and passion had the highest relationship ($r = .435$) (Sigmundsson et al., 2020a). The study argued that passion drives individuals to higher performance and that gritty individuals have the perseverance to stay in the course (Sigmundsson et al., 2020a). Based on passion and grit having the highest correlation in the current study, the factors appear to be necessary to higher athletic performance. Interestingly, studies have implied gender differences in the relationship between passion and grit. Research have reported a lower correlation between the factors among women (Sigmundsson, 2021; Sigmundsson et al., 2020a). Conversely, when comparing the correlation for the group as a whole in this paper to a study carried out on male football players ($r = .576$), the correlation for women is just about bigger ($r = .580$). On that basis, it could be reasonable to assume that gender differences decrease when they have similar interests and goals (Sigmundsson, Clemente, et al., 2020).

Passion and mindset had a lower yet significant correlation ($r = .269$) for the group as a whole. The finding supports prior studies. However, little research is done on the relationship between passion and mindset solely. Equally to Sigmundsson et al. (2020a), with their research on gender differences among young adults, the correlation between passion and mindset was significant both for the group as a whole ($r = .260$) and for the female group ($r = .299$). The finding also supports Sigmundsson (2021), who found low, significant correlations for the group as a whole ($r = .166$) and the female group ($r = .195$). This suggests that the relationship between passion and mindset could be essential for achievement. Conversely, Sigmundsson, Clemente, et al. (2020) found a low yet non-significant correlation between passion and mindset among male football players. On that note, the findings in this study are incompatible with their research. A possible explanation for the conflicting results could be that this study used a female sample, and Sigmundsson, Clemente, et al. (2020) used a male

sample. The variations could imply that different factors matter differently between the genders.

On the contrary, the non-significant finding between grit and mindset for the group as a whole differ from previous findings. Prior research suggests that they are factors that contribute to great performances and achievement and that athletes with growth mindset reported higher levels of grit (Albert et al., 2019; Hochandel & Finamore, 2015). The football players in Sigmundsson, Clemente, et al. (2020) had a significant correlation between grit and mindset for the group as a whole ($r = .271$), however groupwise, the correlation was non-significant. The low correlation might indicate that athletes' mindset varies, despite being gritty. Moreover, their mindset and grit could be affected by other intrinsic and extrinsic factors (Sigmundsson, Clemente, et al., 2020). The findings in the current study imply that a correlation between grit and mindset is less important to female athletes than the correlation between passion and grit.

The relationships in the top series

In the top series, the group had the highest mean score for passion, 4.55, and grit, 3.94. The small relationships between passion and grit ($r = .242$), passion and mindset ($r = .348$), and grit and mindset ($r = .167$) were, however, not significant. A preceding study found a moderately significant correlation between passion and grit among male football players at the elite level ($r = .474$) (Sigmundsson, Clemente, et al., 2020). Considering the findings in this study being inconsistent with Sigmundsson, Clemente, et al. (2020), one might assume that they could be affected by different factors due to historical differences. As mentioned, the history of female football players has been troublesome. Even though progress has been made and the sport is more equal today, there are still differences such as financial support, salary, attention, and media publicity (Dunn & Dunn, 2016; Fasting, 2003, p. 165; Votre & Mourão, 2003, p. 271). Hence, female football players might be motivated by other factors than men, which could explain the inconsistency with prior studies.

Apart from the historical differences, the fact that passion and grit don't correlate for this group could have multiple explanations. For instance, the group has a small group size which could affect the results from the analyses (Field, 2013). Other factors could also interfere with the relationship between passion and grit, which could explain why they don't correlate for this group. For instance, Tedesqui and Young (2017) found perseverance of effort to be significantly associated with deliberate practice. Their findings build on prior assumptions concerning deliberate practice and individuals' capacity to engage in hard work

(Ericsson et al., 1993). Thus, the findings in this study may indicate that grit matters for football players in the top series, especially in the matter of their investment in deliberate practice. Deliberate practice demands engagement and effort. On that note, grit could be essential to persist through challenges and resistance (Tedesqui and Young, 2017).

The findings presume that having passion and being gritty is essential to achieve success in the area you are focused on. Further, it is natural to assume that both factors are of importance to their motivation. The high passion and grit scores imply that the factors are important when you are a professional football player. Literature indicates that perseverance, interest, and passion are essential to stay in the course and have the willpower to engage in valued activities (Duckworth & Quinn, 2009; Sigmundsson et al., 2020b). Additionally, the results support findings suggesting that passion for a theme, skill, or area is essential to become successful in what you do (Ericsson & Pool, 2016; Sigmundsson et al., 2020b). Persistence itself does not develop new skills or engagement. Passion and grit may be the factors that drive them to achieve positive outcomes, such as excellent results and being able to play in the top series. Since the results differ to some extent from previous findings among elite athletes, more research is needed to investigate further. It would be interesting to investigate whether historical differences are decisive in relation to motivational factors for men and women. However, other studies, including athletes, have findings suggesting that high scores on grit and passion are essential in sports (Cormier et al., 2019; Sigmundsson et al., 2020b).

The relationships in 1. Division

For the group in 1. Division the correlation between passion and grit was large and significant ($r = .504$). As mentioned in connection to findings for the group as a whole, this result is consistent with prior research (Sigmundsson et al., 2020b; Sigmundsson, Clemente, et al., 2020; Verner-Filion et al., 2020). However, these findings contradict the low non-significant results within the group in the top series ($r = .242$). Thus, there is reason to presume differences in how important the motivational factors are for the different divisions. Moreover, it could indicate that there is variation in what's essential for the different divisions. The correlation between passion and grit has previously been seen as crucial to improving skills and performance levels (Duckworth et al., 2007; Jachimowicz et al., 2018). Thus, the correlation might matter more to the divisions below the top series such as the group in 1. Division. There is still a higher level of performance they can reach, and the correlation between passion and grit might be the key factor to achieve such a level. This

draws a line to the previously mentioned arrow, where passion is the direction along with grit as the strength and size (Sigmundsson et al., 2020b). However, the group in 1. Division is the biggest group in this study which might have affected the results from the analyses.

According to Field (2013), group sizes matter when doing significance tests. A bigger group will more likely have a significant finding than a smaller group. Thus, this might influence the results as the group in the top series (16) is smaller than the group in 1. Division (23).

Nevertheless, the correlation could indicate the importance of passion for being gritty. Larkin et al. (2016) demonstrated a potential connection between grit and sport-specific engagement, which can be linked to perseverance and passion toward long-term goals. Existing literature concerning passion and grit argue that gritty and passionate individuals are more likely to spend more time and engage more in their preferred activity than less gritty and passionate individuals (Duckworth et al., 2017; Larkin et al., 2016; Vallerand et al., 2008). On that note, football players with high scores in grit and passion might spend more time in football-specific activities over long periods to achieve their performance goals.

Aditomo (2015) found growth mindset to be a buffer against demotivation in his research. This might be relevant for the group in 1. Division as they have the highest mean score for mindset 4.62. In that matter, growth mindset might be essential to reach a higher level of performance and success (Dweck, 2000). Therefore, a growth mindset could be crucial for the group to prevent demotivation and setbacks (Aditomo, 2015). Further, athletes with growth mindset have shown to find success in learning and improving, handling setbacks, and taking charge of the process (Dweck, 2017). Hence, growth mindset could be necessary for the groups in the lower divisions to help them stay motivated and keep improving their skills.

The relationships in 2. Division

The group in 2. Division had the strongest correlation between passion and grit ($r = .721$) in the current study, which in general is a strong correlation, according to Cohen (1992). The other correlations were low yet not significant. The results support prior arguments about passion and grit being essential for those striving to reach higher performance levels (Sigmundsson et al., 2020b; Sigmundsson, Clemente, et al., 2020; Verner-Filion et al., 2020). Also, the similarity between the findings for the groups in 1. Division and 2. Division could be due to them have similar goals concerning performance level, and both groups have a higher division to strive and aim for.

Next, the results concerning the group in 2. Division resembles with findings in prior literature. The correlation between passion and grit is corresponding with the correlations for Junior 15 ($r = .655$) and Junior 18 ($r = .679$) (Sigmundsson, Clemente, et al., 2020). This suggests that the correlation between passion and grit is important for both genders to become experts (Ericsson & Pool, 2016; Sigmundsson et al., 2020b). Also, it reinforces the argument about passion and grit being essential for football players that are still striving to become experts. However, as previously mentioned, prior research implies that there are gender differences in the relationship between passion and grit. The studies claim that the correlation between passion and grit appears lower among women (Sigmundsson, 2021; Sigmundsson et al., 2020a). Like the findings for the group as a whole regarding gender differences, the group in 2. Division had a higher correlation between passion and grit than the football players at Junior 15 and Junior 18 (Sigmundsson, Clemente, et al., 2020). It could signify that gender differences might diminish when they are at the same performance level and have similar goals. This statement is still to investigate as the current study doesn't answer this question. However, it is an interesting point to explore further.

The group in 2. Division has 16,2 (SD = 1.47) as their mean age. Sigmundsson (2021) found in his study a correlation between passion and grit ($r = .588$) within a young age group (14-19). Thus, the current findings are in line with prior results within similar age groups and suggest that age matter when it comes to motivational factors such as passion and grit. The strong correlation between passion and grit in this study could imply that the factors are of extra importance for younger groups in sporting contexts. This is also a further argument for passion and grit being intertwined (Sigmundsson et al., 2020b).

Lastly, their mean score on mindset (4.34), which is the lowest compared to the other groups, is interesting. The score is equal to Sigmundsson's (2021) results on mindset (4.34) within a similarly young group (14-19). The majority of the literature on growth mindset seems to consider it an essential factor concerning achievement and performance across different domains (Aditomo, 2015; Albert et al., 2019; De Castella & Byrne, 2015; Dweck et al., 1995). Thus, growth mindset could contribute to motivation and setbacks for the group (Dweck, 2017). However, a recent study implies that mindset doesn't necessarily matter to one's performance (Kaijanaho & Tirronen, 2018). Their study consists of students in an academic setting, and their results detected no association between student's mindset and their course outcomes (Kaijanaho & Tirronen, 2018). On that note, it can be argued that mindset could be most useful to assess for those who give up, rather than the level of achievement as

individuals at a certain level often have a growth mindset. (Dweck et al, 1995; Kaijanaho & Tirronen, 2018). This is yet another interesting point of view that requires future research.

Limitations

The current study does not go without limitations. First, one weakness of this study is the small sample size and small group sizes. Second, the group appears to be somewhat homogenous as they all play football at a higher level. On that note, the results might not be generalizable. A bigger sample would be necessary to avoid skewness and achieve normality. Since this study aims to test for significance, a normally distributed sample is important for the statistic tests and p-values to be accurate (Field, 2013). Third, the study used a digital survey to collect the data. Digital surveys have both advantages and disadvantages. However, due to COVID-19, it was the safest option for data collection considering possible exposure hazards. When using digital surveys, one relies on the respondent to understand the questions and recall memories about their behaviour which can be challenging (Schwarz et al., 2008). Although digital surveys have multiple weaknesses, it also gives the respondent the possibility to answer when they can and want to. This may prevent answers affected by stress or social desirability bias and provides the respondent with more time to recall memories (Schwarz et al., 2008).

Nevertheless, all the measurements showed good internal consistency, which indicates that the instruments are reliable (Duckworth & Quinn, 2009; Dweck et al., 1995; Sigmundsson et al., 2020b). The study did not control for other demographic variables such as age, socioeconomics, or personality traits. For instance, Conscientiousness and Neuroticism have been investigated concerning individuals and whether they become successful or not (Duckworth et al., 2007). Lastly, another weakness of this study is the correlation analyses. This type of analysis cannot determine the unique contribution of passion, grit, and mindset among the sample.

Implications and future research

This study explores the relationship between passion, grit, and mindset among female football players in Norway. Prior studies have investigated the relationship between the factors. However, more research is needed to understand the relationship between the factors better and examine their association with other factors. Therefore, the connections should be explored when controlling for demographic variables. Besides, more literature concerning gender differences within relations between passion, grit, and mindset across various domains

is needed to understand better whether the disparity is domain-specific. Studies concerning passion, grit, and mindset are in general limited to specific domains and groups. This study tries to contribute with diversity by including a female sample in a male-dominated field such as sports. Further, the current study wishes to contribute to an increase in interest in women's football and female athletics in general. Future studies should consider that the relations between passion, grit, and mindset could vary across age, gender, and domains. Diversity and variety using different samples, groups, and domains could give a greater perspective and contribute to a more interesting and broad range of findings.

Moreover, the passion scale used in this study is relatively new. Passion towards achievement should be investigated more to give an overall picture of passion (Sigmundsson et al., 2020b). Additionally, motivational factors such as passion, grit, and mindset can be considered essential and relevant within several areas, including academics, work-life, sports, and hobbies. Hence, the awareness about the importance of the factors and their relations deserves more attention within psychology, especially in learning, development, and performance.

Conclusion

The current study aimed to examine the differences in passion, grit, and mindset across three divisions among female football players in Norway. In addition, the study investigated the associations between passion, grit, and mindset for the group as a whole and each of the three groups. The multivariate analysis of variance found no significant effect of division on passion, grit, and mindset. On that note, the analysis implied that there were no differences in passion, grit, and mindset across the divisions. Further, the Pearson's correlation indicated significant correlations between passion and grit, and passion and mindset for the group as a whole. No significant correlations were found within the group in the top series. However, for the group in 1. Division and 2. Division, passion, and grit had significant correlations. The main findings are in line with arguments claiming passion and grit to be intertwined and essential to become an expert (Ericsson & Pool, 2016; Sigmundsson et al., 2020a; Sigmundsson, Clemente et al., 2020). Interestingly, findings in this study imply that gender differences in passion, grit, and mindset could vary across domains. In this case, it seems that gender differences decrease in sports and athletics when comparing the current findings to existing literature. This shed light on an insufficient part of literature about passion, grit, and mindset. I urge future research to investigate this further.

In sum, this study highlights multiple interesting results that require further elaboration. The current paper provides valuable insight regarding the factors among women in sports, as most of the literature regarding sports consists of male samples. Also, literature involving sports should consider including a historical aspect as the findings in this study might indicate that historical factors could affect the results. More literature is needed concerning motivational factors, e.g., passion, grit, and mindset, in relation to success and excellent performance. New knowledge is necessary to explore further the importance of passion, grit, and mindset in relation to other domains and contexts. Additionally, to evaluate whether the factors have different effects during various life phases, more comprehensive and longitudinal research would be interesting.

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List of Appendices

Appendix A: Information Sheet and Consent Agreement

Appendix B: English Version of Questionnaire

Appendix A:

Information Sheet and Consent Agreement

Vis

Bygg skjema

Kodebok

Innstillinger

Rettigheter

Innhent svar

Se resultater

Passion, Grit and Mindset among female soccer players

Side 1

Please answer all of the questions in one session. If you cancel along the way, you will not be able to get back to your answers. You consent to participate in this survey by answering the questions and send them in by clicking "Finish" on the last page.

The purpose of the survey is to explore the relations between Passion (passion for different activities and themes), Grit (the ability to keep going when meeting resistance), and Mindset (the way we see our own skills and intelligence) among female soccer players in Norway.

The survey is voluntary and anonymous. The data will be used in a master's degree at psychological institute by NTNU.

If you have any questions about the survey, you can contact Silje Hauklien Søhus:
siljeshus@gmail.com

Appendix B:

English Version of Questionnaire

Gender:

- Female
- Male
- Other
- Do not want to give up

Age:

What is your level of education:

- Primary school
- High school/ vocational
- Bachelor's degree
- Master's degree
- Ph.D.

Which division do you play in:

- Top series
- 1. division
- 2. division
- 3. division
- 4. division

Now there are some simple questions to consider if it's "typical of you" or "not at all"

	Very much like me	Mostly like me	Somewhat like me	Not much like me	Not like me at all
I have an area/theme/skill I am really passionate about	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would like to use a lot of time to become good in that area/theme/skill	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think I could be an expert in one area/theme/skill	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have passion enough to become very good in the area/theme/skill I like	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I work hard enough to fulfill my goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a burning passion for some areas/theme/skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use lot of time on the projects I like	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My passion is important for me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Now there are some simple questions to consider if it's "typical of you" or "not at all"

	Very much like me	Mostly like me	Somewhat like me	Not much like me	Not like me at all
New ideas and projects sometimes distract me from previous ones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Setbacks don't discourage me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been obsessed with a certain idea or project for a short time but later lost interest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a hard worker	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often set a goal but later choose to pursue a different one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have difficulty maintaining my focus on projects that take more than a few months to complete	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I finish whatever I begin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am diligent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

