# The role of Emotional Intelligence for success in motorsports

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**Summary**

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| Research questions: | What is the role of emotional competencies for success in motorsports. Is there a difference between the emotional competencies of race car drivers and the competencies of the normal population? Is there also a difference in the emotional competencies between successful and unsuccessful drivers? |
| Methods: | Empirical study using the Bar-On EQ-i as an instrument to measure the level of emotional intelligence of race car drivers. |
| Results: | There are statistical significant differences between the emotional intelligence of race car drivers and the emotional intelligence of the normal population as well as between successful and unsuccessful drivers. |
| Structure of the article: | 1. Essay; 2. Literature Review; 3. Research questions & methods; 4. Detailed empirical results; 5. Conclusions; 6. About the author; 7. References |


## 1. ESSAY

Becoming a world champion in Formula 1 is the dream of every little boy who starts a career in motor sports. But only a very few finally manage to reach the top. To become one of the best in motor sports many factors must fit together. Natural talent is just one of the prerequisites in order to become a successful race car driver. Experience shows that very often highly rated race car drivers with superior performance abilities fail.

In the world of business it is recognized that competencies in the area of emotional intelligence are the factors that distinguish superior performers from others. But emotional competencies have never before been linked to motor sports. There are many factors which influence the performance of racing drivers. Racing drivers depend a lot on things like their car, technical progress of the team, political decisions, sponsor decisions and strategies. Motor sport racing requires drivers to have many skills like high concentration, quick reactions, driving skills, technical understanding, physical fitness, and mental skills but the emotional component is almost never taken into consideration. In order to improve the potential for flow and peak performance experiences, a driver needs to increase his skill levels in his sport.

Though there are many different factors which play an important role in order to become a successful race car driver the following article wants to answer the question if emotional competencies have an influence on the success of race car drivers. The goal of the underlying research was to examine two questions. The first question was whether there is a difference in the emotional competencies between race car drivers and the normal population. The second question was whether there is a difference between successful and unsuccessful drivers. The participants of the research study were young race car drivers who were asked to complete the Bar-On Emotional Quotient Inventory (EQ-i), which is a widely recognized test of emotional intelligence. The importance of emotional intelligence in the business environment has been studied a lot over the last few years. Research data show that emotional intelligence plays an important role in leadership and managerial effectiveness. Emotional intelligence has been identified to be the decisive factor to form managers in order to be successful. Research has suggested that emotions also play an important role in

sports and have great influence on the sport performance. Athletes who are not able to manage their emotions will hardly be able to win or build up a long lasting and successful career. Successful management of emotions is the basis in order to achieve peak performance. Athletes are always striving to perform at their best but without controlling emotions optimal performance is hardly possible. Many situations in sports elicit emotions and emotions themselves in sports have a lot of consequences and can negatively or positively affect behaviour. Thus, it can be assumed that also in motor sports emotions are an important factor for the performance of racing drivers. This is also true when we look besides the core activity of driving a car. The higher the level in motor sports the more important the business aspect. This means that Formula 1 in our days is more a business than a sport and drivers need to develop more skills than just driving a car. Drivers are faced with multiple challenges on and off the track. For most drivers the challenges off the track are more difficult to handle. Although in a Formula 1 team a few hundred people work behind the scenes for the success of the team, racing drivers are the figureheads and get all the public recognition. Therefore it is up to the drivers to motivate people around them to positively influence the teambuilding process. In this regard, a driver needs leadership skills with the necessary emotional competencies. As emotional demands on racing drivers are diverse and very high an early emotional maturity is an important factor for young racing drivers in order to have a successful career. Very often criticism from experts, media, etc. addresses the emotional competence of drivers. For example the Ex-Formula 1 driver Juan Pablo Montoya has been very often described as not being able to control his emotions, which did not allow him to tap his full potential and led to inappropriate reactions in many situations. Sometime drivers explain mistakes by not being able to keep concentrated or a bad performance by a lack of motivation. This shows that emotions are an important and influential factor for their performance. Emotional intelligence develops over time and it can be improved for example through training, coaching or therapy. But this requires being aware of the importance and influence of emotions on performance.

There is plenty of literature about emotions in sports but the role of emotions in motor sports in particular has never been analysed. As there has not been a lot of research in the area of motor sports, there hardly exist any research data. My experience has shown that people working directly with drivers like managers and trainers have their individual ideas about the requirements for drivers but there is no common shared knowledge that is based upon research. This can also be seen in the fact that for most sports there are textbooks with detailed descriptions of required skills and training programs. Such guides do not exist in motor sports and we have to rely more on the opinion of individual experts than on research based data. The underlying research of this article is meant to be a first step towards a scientific approach to analyse decisive factors for success in motor sports. Like a racing car, which is sometimes running better than at other times, race car drivers are not always performing on the same level. But the goal of race car drivers as for all other athletes is to always perform at their best.

The statistical analysis of the research study shows that there is a statistically significant difference between the emotional competencies of race car drivers and the normal population in the four competency areas self-regard, flexibility, self-actualization and optimism.

The result for self-regard suggests that that in comparison to the normal population race car drivers have a better ability to respect and accept themselves as basically good. Drivers are more motivated to possess, enhance, and maintain positive self-views. It can easily be understood that an athlete is more likely to perform well if he believes in his skills than if he doubts his abilities. Regarding flexibility it seems that race car drivers in general have a better ability to adjust emotions, thoughts, and behaviour to changing situations than the normal population. The score for self -actualization suggests that race car drivers have a tendency to strive for self-actualization. Always trying to do the best and strive toward maximum development of their abilities and talents seems to be an important characteristic. The urge of giving the best all the time and working on oneself is essential in order to be successful in such a competitive sport. But the most significant difference between race car drivers and the normal population was found on the Optimism scale. Thus, being optimistic seems to be a requirement for drivers. During their career race car drivers have to overcome many setbacks and frustrations while maintaining their motivation to succeed. Especially since many external factors like politics, technical problems, pressure from the media etc have a negative

influence on a driver's career, optimism is important to remain confident and to keep motivated.

The values for Problem Solving, Stress Tolerance, Impulse Control and Social Responsibility are only slightly higher than the population test norm but indicate that race car drivers seem to have good abilities in these competency areas. Problem solving is closely related to decision making and race car drivers face many problematic situations where they need to make a decision. This includes for example short term decision in a race situation as well as problems arising in connection with their career. A slightly higher stress tolerance helps drivers to stay relaxed and composed when facing difficulties and it is in the nature of competition that many stressful situations arise. The score on the Impulse Control scale indicates that race car drivers generally have a good ability to control themselves and to handle their emotions. But one can observe that this is a lot depending on the situation and during a race impulsive reactions from drivers can be observed very often. So from most of the drivers we have already seen impulsive reactions like abusive gestures in a race or throwing the gloves away after a crash or retiring due to a technical problem.

Race car drivers also seem to have a slightly higher social responsibility than the normal population. As a member of a big team, race car drivers are depending and working with many people, so they need to be able to cooperate with others. For the remaining scales Independence, Happiness, Assertiveness, Reality Testing, Interpersonal Relationship, Emotional Self-Awareness and Empathy the results are comparable to the norm and thus it does not seem that race car drivers have better skills in these competency areas than normal people. Regarding the Interpersonal Relationship scale one would expect a higher score, as team work is the basis for success in motor sports but it looks as if normally developed skills are sufficient. The reason behind it can be that relationships in a team must be good but are mostly kept on a very professional level. Race car drivers have a different emotional profile in comparison to the normal population which helps them to "survive" and succeed in the competitive world of motor sports.

Comparing the results of successful and unsuccessful drivers a statistically significant difference could be only found on the Social Responsibility scale. Unsuccessful drivers score higher on the Social Responsibility scale than successful drivers. These results indicate that it does not seem to be helpful to have a higher social responsibility in order to be successful. This could reflect the consuming energy, drive and commitment required to be successful in the field of motor sports where, as in other fields, little energy and time is left over for more social concerns. The result suggests that successful race car drivers feel less pulled towards compromising their needs when faced with needs of others. The score for the successful drivers is within the normal range so they are cooperative and constructive members of their social group. The mean score of the unsuccessful group being well above average suggests that they will deny or suppress their needs and drives to cooperate with the team or others which may distract them from their concentration and ability to get into flow.

The comparison of all other scores showed certain tendencies and there seems to be a difference in most emotional competencies of successful and unsuccessful drivers. The biggest differences refer to the scales for Independence and Flexibility. It seems that independence seems to be important for success in motor racing. As unsuccessful drivers scored higher on the Flexibility scale being too flexible seems to have a negative impact on performance and success. An explanation for this can be found if we compare the scores for Flexibility with the scores on the Impulse Control scale. The result shows that successful drivers seem to be more impulsive. This means that they react to situations during the race without thinking or problem solving but then return to the race plan while unsuccessful drivers tend to be oriented towards problem solving and flexibility adapting to situations which might then pull them out of flow/focus and cause them to modify their race plan. Unsuccessful drivers are more likely to get distracted from their original plan. For all other scores the differences are too small to make any statements though it can be said that successful drivers have different emotional profiles than unsuccessful drivers.

The linkage between emotional intelligence and success in motor sports represents a new and interesting approach. As a consequence of the development on an emotionally competent "success profile" for drivers, coaching models can be developed in order to help drivers to be more successful. The results also show interesting tendencies which inspire for future research in this area. The underlying study is also the first step to introduce and establish the concept of emotional

intelligence to evaluate the performance and potential of motor sports athletes.

## 2. LITERATURE REVIEW

Emotions clearly play a key role for sport performance (Hanin, 2000). The results of the research study of Zamanian et al (2011) showed that in general athletes showed a significant difference in emotional intelligence in comparison with non-athletes.

The roots of the concept of emotional intelligence go back to 1920, when E.L. Thorndike coined the concept of "social intelligence". The term emotional intelligence was first used by Salovey and Mayer (1990). But it was Daniel Goleman (1995) who made emotional intelligence to become very popular and acknowledged in the corporate world. Influenced by David McClelland (1973), Goleman (1998) stated that emotional intelligence is a better predictor for success in life than intellectual attainment or technical ability. Similar to Goleman, Bar-On (2002) stated that emotional intelligence plays an important role in how well one succeeds in life, copes with daily situations and gets along with the world. In his approach Bar-On uses the term "Emotional Quotient (EQ)" to measure emotional intelligence. The Bar-On model provides the theoretical basis for the Emotional Quotient Inventory (EQ-i) (Bar-On 2006).

The EQ-I provides the theoretical and empirical structure for this research study. Using its terms it is assumed that race car drivers score significantly higher than the normal population in the four competency areas Self-Regard, Flexibility, Self-Actualization and Optimism and have slightly higher scores for the values Problem Solving, Stress Tolerance, Impulse Control and Social Responsibility.

*Self-Regard*

Athletes usually experience flow during peak performance, which means that flow is an important enabler for peak performance (Jackson and Czickszentmihalyi, 1999). Flow only occurs when a person perceives his skills as matching the challenge. Self-confidence or self-regard is therefore an important flow facilitator (Jackson 1992, 1995).

According to Bar-On (2006) self-regard is the ability to perceive, understand and accept oneself as basically good. It is closely related to general feelings of security, inner strength, self-assuredness, self-confidence and feeling of self-adequacy. Meyers et al (1979) suggested that successful performance in sport requires assertiveness and self-confidence.

*Flexibility*

Flexibility refers to the ability to adjust and adapt one's feelings, thoughts and behaviour to changing conditions and situations (Bar-On, 2006). Flexible individuals are able to adapt to unfamiliar, unpredictable and dynamic circumstances. People who are high in flexibility are agile, synergistic, and capable of reaching to change without rigidity (Bar-On, 1997). In their study Rudermann and Bar-On (2003) also identified flexibility as key EI competence for leaders. Good leaders are able to successfully manage change and are able to adjust, change and adapt their feelings and thinking to new situations. According to Goleman (2004), flexibility is a requirement of adaptability seen as being able to take into consideration various viewpoints on a situation.

*Self-Actualization*

Another important competence for race car drivers is self-actualization. Self-actualization refers to the extent of the striving to achieve personal goals and actualize one's potential (Bar-On 2005). Maslow (1943) has described self-actualization in his model hierarchy of needs as the fulfilment of one's highest human potential and capabilities. People high in self-actualization consistently try to do their best in each situation, and try to improve themselves in general. People low in self-actualization tend to conform to what is expected of them and find their life defined by forces outside their control (Bar-On, 1997).

*Optimism*

Optimism also plays an important role for race car drivers and is one of the most important motivational abilities. Optimism is the ability to look at the brighter side of life and to be positive (Bar-On, 2006) and is a key competence to deal with setbacks. Optimists see setbacks as a result of factors they have the power to influence (Goleman, 1998). Optimistic people have a strong belief that good things will happen and are

confident and persistent (Scheier & Carver, 1992). In life optimistic people experience less depression and more enjoyment in social interactions (Seligman, 2011).

*Problem Solving*

Problem solving relates to the ability to find effective solutions for problems of a personal and intrapersonal nature (Bar-On, 2006). Problem solving is among other characteristics associated with conscientiousness and discipline. People with a high competence in problem solving are methodical and systematic in approaching problems (Bar-On, 1997). They always have the desire to do their best and see problems as a challenge, and not as something which should be avoided.

*Stress Tolerance*

Lazarus (1984) defined stress as a state of anxiety produced when events and responsibilities exceed one's normal coping abilities. Orlick (1986, 1989) suggested, the ability to remain cool under situations of tension and stress is the true sign of a sports champion.

According to Lazarus (2006) stress is considered to be the fundamental cause for many emotions and therefore is closely related to the emotions of anxiety and anger (Seaward, 1999). In stress theory there are three different kind of stresses, eustress, neustress and distress. As distress is the most common type of stress, having negative implications it is normally abbreviated as stress (Seaward, 1999).

As described by the Yerkes-Dodson principle up to a certain point stress and arousal can increase performance (Yerkes & Dodson, 1908). Beyond the optimal stress level, all aspects of performance begin to decrease in efficiency (Seaward, 1999). Carrying outside stresses into the sport or becoming emotionally upset during the course of performance might negatively influence performance (Jackson & Cziksentmihalyi, 1999).

In their competitive environment athletes are confronted with many stressors such as organizational factors, media pressures, travel, competitive expectations, preparatory training, demands of elite sport and distractions (Gould, Eklund, & Jackson, 1993).

Because of this close relationship between stress and sport performance, stress management needs to be considered when working with athletes. The goal is to find the individual optimal stress level with optimal arousal and to control negative emotions in order to achieve peak performance. Optimal performance results in a total involvement in the task and the best possible recruitment of resources (Hanin, 2000).

*Anxiety and Impulse Control*

As mentioned above stress is the main cause for anger and anxiety (Seaward, 1999). These negative emotions have high potential to negatively affect performance.

According to Spielberger (1972) anxiety is an emotional reaction to a stimulus perceived as dangerous. The perception of the same stimulus is different to individuals. A stimulus, which is perceived as a challenge to one individual, may be threatening to another and neutral to a third.

In sports high levels of anxiety during competition are considered as harmful, worsening performance and leading to dropout, interventions have almost exclusively involved techniques to control and reduce anxiety. Each athlete possesses an optimal zone or range of anxiety most beneficial for performance. The range of the optimal zone of anxiety may differ across athletes (Taylor, 1996).

Anger is considered to be one of the most uncomfortable emotions human beings can experience (Seaward, 1999). In sports, anger is very often triggered by stress and associated with arousal in competitions. The expression of anger usually results in aggressive behaviour. The type of aggressive behaviour one chooses depends on previously experienced positive consequences and an athlete's suppressed or expressed anger may have positive or negative consequences on performance. Aggressive behaviour seems to be more common in sports than in daily life situations (Hanin, 2000). Anger provides an incredible source of energy and physical strength as long as it can be controlled. Although "controlled aggression" has fuelled the performance of many athletes to Olympic medals (Seaward, 1994) negative emotions can disrupt optimal performance (Hanin, 2007). Hence athletes should learn strategies to cope with aggression, as there are many possible negative impacts of aggressive behaviour on sports performance and other competitors (Hanin, 2000).

*Social Responsibility*

Social responsibility is the ability to demonstrate oneself as a cooperative, contributing, and constructive

member of one's social group and cooperate with others (Bar-On, 2006). People who are high in social responsibility are often cooperative, contributing and constructive members of their social group and are described as responsible and dependable. On the contrary, people with a low social responsibility score may hold antisocial attitudes, act abusively towards others, and take advantage of others (Bar-On, 2005). Social responsibility highly correlates with empathy, which means to be aware of and understand how others feel. (Bar-On, 2006).

## 3. RESEARCH QUESTIONS & METHODS

In order to evaluate and compare the emotional competencies of race car drivers the following two hypotheses have been formulated:

Hypothesis 1*: There is a difference in the emotional competencies of race car drivers and the normal population.*

Hypothesis 2: *There is a difference between the emotional competencies of successful and less successful race car drivers.*

A total of fourteen racing drivers between the age of 16 and 23 participated in the study whereas only 10 fully completed the EQ-i test. The drivers were competing in different racing series like Formula BMW ADAC, World Series by Renault, GP2 etc. and two drivers had already experience as Formula 1 test drivers.
In order to collect and evaluate the EQ-profiles of the participating race car drivers the BarOn EQ-i Test was identified as the appropriate instrument.
The Bar-On Emotional Quotient inventory was selected because it is the most widely used measure of emotional-social intelligence in the world (Bar-On, 2004). Furthermore the EQ-i was the first measure of its kind to be published by a psychological test publisher (Bar-On, 1997) and is recognized as a sound measure of Emotional Intelligence by the Buros Mental Measurement Yearbook (Plake and Impara, 1999).
The EQ-I consists of 133 items and produces scores for five composite factors that represent a series of emotional/social competencies, skills and facilitators. In detail the composite scales and subscales are as follows:
INTRAPERSONAL (self awareness and self expression): *Self-Regard, Emotional Self-Awareness, Assertiveness, Self-Regard, Self-Actualization, Independence.*
INTERPERSONAL (social awareness and interpersonal relationship): E*mpathy, Interpersonal Relationship, Social Responsibility.*
ADAPTABILITY (change management): *Problem Solving, Reality Testing, Flexibility.*
STRESS MANAGEMENT (emotional management and regulation): *Stress Tolerance, Impulse Control*
GENERAL MOOD (self-motivation): *Happiness, Optimism.*

## 4. DETAILED EMPIRICAL RESULTS

From the 14 drivers who initially agreed to participate in the study, 10 sent back the fully complete EQ-i tests. One driver sent back the form without having answered a sufficient number of questions. In total three drivers did not respond at all.

*Emotional Quotient Inventory Results*

Table 1 shows the results for the total EQ Scores of the drivers. As it can be seen the range for the total EQ score is from 88 to 128 with a mean of 108.7 and a standard deviation of 13.57.

Table 1
*Total EQ Scores*

| | Min. Score | Max. Score | Mean | SD |
|---|---|---|---|---|
| Total EQ | 88 | 128 | 108.7 | 13.573 |

Table 2
*Scores Composite Scales*

| Composite Scale | Min. Score | Max. Score | Mean | SD |
|---|---|---|---|---|
| Intrapersonal EQ | 71 | 122 | 107.6 | 25.5 |
| Interpersonal EQ | 80 | 124 | 102.5 | 16.44 |
| Stress Management EQ | 81 | 137 | 109.5 | 3.61 |
| Adaptability EQ | 80 | 132 | 108.6 | 11.06 |
| General Mood EQ | 85 | 126 | 110.4 | 14.572 |

Table 3
*Scores Content Subscales*

| Content Subscale | Min. Score | Max. Score | Mean | SD |
|---|---|---|---|---|
| Self-Regard (SR) | 77 | 123 | 107.7 | 13.12 |
| Emotional Self-Awareness (ES) | 80 | 121 | 101.5 | 14.11 |
| Assertiveness (AS) | 64 | 125 | 103 | 19.36 |
| Independence | 70 | 121 | 104.7 | 16.75 |
| Self-Actualization | 100 | 127 | 112.8 | 9.28 |
| Empathy | 75 | 120 | 101.1 | 13.72 |
| Social Responsibility (RE) | 85 | 133 | 105 | 16.38 |
| Interpersonal Relationship | 87 | 120 | 102.1 | 15.14 |
| Stress Tolerance | 89 | 136 | 108.8 | 14.14 |
| Impulse Control | 73 | 124 | 106 | 14.99 |
| Reality Testing | 75 | 127 | 102.9 | 19.34 |
| Flexibility | 81 | 133 | 109.7 | 15.97 |
| Problem Solving | 94 | 138 | 109.6 | 13.24 |
| Optimism | 102 | 135 | 116.1 | 10.32 |
| Happiness | 71 | 124 | 103.9 | 18.27 |

*Analysis in interpretation*

*Comparison of race car drivers with the normal population*

As the total EQ and the composite scales (Table 2) build up on the content subscales the comparison of results and statistical analysis is based on these subscales. The scores of the content subscales can be seen in Table 3. To address the first hypothesis, the race car drivers were compared against the EQ-i test means of the normal population (M=100) by using the Mann-Whitney-U test (Mann and Whitney, 1947). The results are displayed in Table 4.

Table 4
*Statistical Results for the Race Car Drivers Compared with the Normal Population*

| Content Subscale | Mann-Whitney U | Z | Significance 2-tail (p) |
|---|---|---|---|
| Self-Regard | 0,000 | -2,268 | ,023* |
| Emotional Self-Awareness | 4,500 | ,000 | 1,000 |
| Assertiveness | 3,000 | -,756 | ,448 |
| Independence | 1,000 | -1,512 | ,130 |
| Self-Actualization | ,000 | -3.024 | ,002** |
| Empathy | 4,500 | ,000 | 1,000 |

| | | | |
|---|---|---|---|
| Social Responsibility | 3,000 | ,756 | ,448 |
| Interpersonal Relationship | 4,500 | ,000 | 1,000 |
| Stress Tolerance | 1,000 | -1,512 | ,130 |
| Impulse Control | 1,000 | -1,512 | ,130 |
| Reality Testing | 3,000 | ,448 | ,448 |
| Flexibility | 0,000 | -2,268 | ,023* |
| Problem Solving | 1,000 | -1,512 | ,130 |
| Optimism | ,000 | -3,78 | ,000*** |
| Happiness | 1,000 | -1,512 | ,130 |

*p < .0,05 **p < 0,01 ***p < 0,001

*Content Subscales with Statistically Significant Differences*

*Self-Regard*

With a mean score of 107.7 (p=.023) the statistical result shows that race car drivers have a much higher self-regard than the normal population. This indicates that the drivers in the study have a much better degree of self-respect and self-confidence. It also shows that in comparison to the normal population they are more fulfilled and satisfied with themselves and have positive feelings about life in general.

*Flexibility*

The statistical result shows that race car drivers are much more flexible than the normal population (p=.023). This indicates an effective ability to adjust emotions, thoughts, and behaviour to changing situations and conditions. In general it seems that the drivers find it fairly easy to learn new things, do not become too fixed into routines, and remain open-minded to differing opinions and ways of thinking.

*Self-Actualization*

With a mean score of 109.7 (p=.002) the statistical result shows that for race car drivers self-actualization is much more important than for the normal population. This means that they consistently strive to do their best in each situation and always want to improve in general. Racing drivers most likely realize their full potential and are involved in pursuits that are meaningful, interesting, and exciting for them. The score indicates that in comparison to the normal population, drivers are more motivated, more successful and strive to optimize performance.

*Optimism*

The mean score of 116.1 (p=.000) on the optimism scale represents the highest score of the drivers and the statistical result shows that they are on a completely different level than the normal population. As the score shows, race car drivers are highly optimistic. They are able to look on the brighter side of life and maintain a positive attitude, even in the face of adversity. Optimism is usually a helpful characteristic in handling difficult or stressful situations.

Although for the other values no statistically significant results could be found, the values for Problem Solving, Stress Tolerance, Impulse Control and Social Responsibility indicate that race care drivers have good abilities in these competency areas.

*Content Subscales with scores slightly higher than the population norm*

*Problem Solving*

In comparison to the population averages, the mean score of 109.6 on the problem solving scale is slightly higher and reflects an effective approach to resolving problems. Race care drivers probably have a fairly deliberating style, and are good at defining problems as well as generating and implementing potentially effective solutions.

*Stress Tolerance*

With 108.8 the stress tolerance mean score of race car drivers is slightly higher than average and suggests the ability to withstand adverse events and stressful situations better than the population norm. It seems that race car drivers have a normal and good capacity to be relaxed and composed when facing difficulties.

*Impulse Control*

On the impulse control scale, with a means score of 106 race care drivers score slightly higher than the normal population. This suggests a good ability to

resist or delay an impulse, drive, or temptation to act. Especially in races drivers face many situations where they should be able to control their impulses but the score does not show that race car drivers have better impulse control than the average.

*Social Responsibility*

The driver's mean core of 105 on the social responsibility scale is also only slightly higher than the average but it indicates that drivers tend towards being cooperative, constructive and contributing to their social group (team). But as the score shows, a normal level of social responsibility seems to be sufficient in order to successfully work with a team.

*Comparison of successful drivers and unsuccessful drivers*

To address the second hypothesis, the successful drivers were statistically divided into two groups so that the "successful" drivers could be compared with the "unsuccessful" drivers. Based on the championship standing the three most successful and the three most unsuccessful drivers were identified.

Tables 5 and 6 show the scores for the content subscales for the successful and unsuccessful drivers.

Table 5
*Content Subscales of successful drivers*

| Content Subscales | Min. Score | Max. Score | Mean | SD |
|---|---|---|---|---|
| Self-Regard | 98 | 119 | 107.33 | 10.69 |
| Emotional Self-Awareness | 86 | 118 | 100.33 | 16.26 |
| Assertiveness | 86 | 125 | 102.33 | 20.26 |
| Independence | 105 | 121 | 112.67 | 8.02 |
| Self-Actualization | 101 | 121 | 112 | 13.86 |
| Empathy | 75 | 99 | 91 | 13.86 |
| Social Responsibility | 87 | 98 | 94.33 | 6.35 |
| Interpersonal Relationship | 87 | 108 | 95 | 11.36 |
| Stress Tolerance | 92 | 111 | 93.33 | 10.21 |
| Impulse Control | 73 | 120 | 99 | 23.9 |
| Reality Testing | 75 | 108 | 95.67 | 18.01 |
| Flexibility | 81 | 103 | 93.33 | 11.24 |
| Problem Solving | 94 | 111 | 99.67 | 9.81 |
| Optimism | 102 | 116 | 110.33 | 7.37 |
| Happiness | | | | |

Table 6
*Content Subscales of unsuccessful drivers*

| Composite Scale | Min. Score | Max. Score | Mean | S.D |
|---|---|---|---|---|
| Self-Regard | 77 | 106 | 96.33 | 16.74 |
| Emotional Self-Awareness | 80 | 121 | 96.33 | 21.73 |
| Assertiveness | 64 | 125 | 92.67 | 30.66 |
| Independence | 70 | 121 | 92.33 | 26.08 |
| Self-Actualization | 101 | 116 | 110.33 | 8.14 |
| Empathy | 90 | 111 | 101 | 10.54 |
| Social Responsibility | 100 | 123 | 113.67 | 12.1 |
| Interpersonal Relationship | 79 | 118 | 95.67 | 20.11 |
| Stress Tolerance | 89 | 110 | 101.67 | 11.15 |
| Impulse Control | 98 | 120 | 107.33 | 11.37 |

| | | | | |
|---|---|---|---|---|
| Reality Testing | 80 | 127 | 97 | 26.06 |
| Flexibility | 102 | 133 | 113.67 | 16.86 |
| Problem Solving | 109 | 111 | 110 | 1 |
| Optimism | 104 | 115 | 111 | 6.08 |
| Happiness | 71 | 110 | 93 | 19.97 |

The successful drivers were compared with the unsuccessful drivers by using the Mann-Whitney-U-Test. The results of the test are displayed in table 7.

Table 7
*Statistical Results for the Successful Drivers Compared with the Unsuccessful Drivers*

| Content Subscale | Mann-Whitney U | Z | Significance 2-tail (p) |
|---|---|---|---|
| Self-Regard | 4,000 | -,221 | ,827 |
| Emotional Self-Awareness | 4,000 | -,225 | ,822 |
| Assertiveness | 3,500 | -,443 | ,658 |
| Independence | 2,500 | -,886 | ,376 |
| Self-Actualization | 4,000 | -,225 | ,822 |
| Empathy | 2,000 | -1,107 | ,268 |
| Social Responsibility | 0,000 | -1,993 | ,046* |
| Interpersonal Relationship | 4,500 | ,000 | 1,000 |
| Stress Tolerance | 4,000 | -,218 | ,827 |
| Impulse Control | 4,000 | -,225 | ,822 |
| Reality Testing | 4,000 | -,218 | ,827 |
| Flexibility | 1,000 | -1,528 | ,127 |
| Problem Solving | 2,500 | -,899 | ,369 |
| Optimism | 4,000 | -,218 | ,827 |
| Happiness | 3,000 | -,655 | ,513 |

*p < .0,05

The test did not show a significant difference between the successful and the unsuccessful drivers in general but a significant difference between the two groups was found regarding social responsibility (U=0.000, p<.05).

*Social Responsibility*

The successful drivers have a statistically significant lower score for Social Responsibility than the unsuccessful drivers. This indicates that unsuccessful drivers are more likely to be cooperative, contributing and constructive members of their social group. It is important to note that with an N of three, the statistical differences can not be considered valid and that both means were within the range for the population.

For all other scores no significant differences could be observed.

## 5. CONCLUSIONS

The article has opened a new field for research in connection with motor sports. The linkage between emotional intelligence and success in motor sports represents a new and interesting approach. Especially the participating drivers can benefit from the results as they can compare themselves with others and identify possible strength and weaknesses. As a consequence of the development of an emotionally competent "success profile" for drivers, coaching models can be developed in order to help drivers to be more successful. Another benefit is that the results show interesting tendencies, which inspire for further research in this area. Additionally with the findings of the underlying study and the experiences made, future research in this area will be facilitated. The underlying study is also the first step to introduce and establish the concept of emotional intelligence to evaluate the performance and potential of motor sports athletes. In the future this shall help

teams, sponsors etc. to minimize the risk of choosing and supporting the wrong driver.

As a result of the experiences made with the study a few recommendations for future research can be made. First of all it is recommended to also include motorcycle racers to have access to a bigger sample group. In order to get statistically valid results the number of participating athletes must be a lot bigger. In addition to this, future research should be planned over a longer period of time to avoid limitations related to time constraints as for example every driver can have a bad season for many reasons. It is also recommendable to involve teams, sponsors etc. in the project, especially if they are engaged in driver development programs as they could all directly benefit from any findings.

Additionally in a future project as many results as possible should be included. This requires the documentation and analysis of data like qualifying results, fastest lap times, test and practice results and makes more complete evaluation of the performance of a driver possible. Finally, considering the researchers experience with this study and taking into account all limitations and recommendations future research can provide interesting and useful empirical results.

## 6. ABOUT THE AUTHOR

Mag. Christof Falch, MBA has a long track record in training, coaching and teaching people.

Christof started his career as a trainer, teacher and coach in alpine skiing. As a skiing professional he worked not only in Austria but also in foreign countries like Argentina and Finland.

Following his skiing career he studied Sports Science at the University of Graz, Austria and graduated with a Master in Sports Science (Diploma in Sports Science, Mag. rer. nat) in 1998.

After his study Christof changed into the field of motor sports and started working as a manager of race car drivers. Between 1999 and 2010 Christof worked with various athletes in motor sports in the top race care series including Formula 1. During this time he also obtained his MBA degree in International Business Management from the University of Applied Sciences in Kempten/Germany.

Christof Falch has his own company and is working as a Management and Marketing Consultant.

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