International Journal of EXERCISE SCIENCE

Original Research

Examining Grit-like Qualities in National Football League Quarterbacks

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ABSTRACT

International Journal of Exercise Science 13(5): 912-923, 2020. In order to excel in the National Football League (NFL) it would seem reasonable to assume an athlete has grit which consists of the constructs of consistency of interest and perseverance of effort. Grit-like qualities such as endurance, urgency and intensity, self-confidence, need for encouragement, and self-criticality may be of particular value for the athlete playing the Quarterback (QB) position. The purpose of the study was to assess the 5 grit-like constructs of endurance, urgency and intensity, self-confidence, need for encouragement, and self-criticality among NFL QBs. The Flippen Profile™ assessment was administered to 29 NFL QBs and the 5 grit-like constructs were recorded. Each of the 5 grit-like constructs were scored on a scale of 0-100, where high scores were considered desirable for endurance, urgency and intensity, and self-confidence, while lower scores were considered as desirable for need for encouragement, and self-criticality. The scores for each of the 5 grit-like constructs were then partitioned by three categories of QB years played: 1-2 (n=8), 3-7 (n=13), and ≥8 (n=8) years. Four key findings emerged following the analysis: the NFL QBs scored favorably on all of the 5 grit-like constructs independent of years played, QBs with ≥8 years' experience scored the most favorably for endurance and the need for encouragement, QBs with 1-2 years' experience scored the most favorably for self-criticality. These results may provide coaches and athletes aspiring to play QB in the NFL with benchmarks regarding the 5 grit-like constructs that are associated with successful NFL QBs.

KEY WORDS: North American Football, NFL

INTRODUCTION

In the last decade there has been a fair amount of research regarding the trait known as 'Grit'. Angela Duckworth defined grit as trait level passion and perseverance it takes to succeed (12). It has been presented as a higher order personality trait that is highly predictive of both success and performance (9). In her research Duckworth examined academics, military academy acceptance and national spelling bees and found that grit was a greater predictor of success than any other factor. Grit predicted achievement in challenging domains beyond measures of talent (12). Duckworth's research led to the development of a 12-item self-report measure of grit (Grit-O) which viewed grit as a compound trait with factors of consistency of interest (CI) and perseverance of effort (PE) (11). Through further study of the two factors

Duckworth and colleagues later developed the short grit scale (Grit-S) as a more efficient measure of grit. The short grit (Grit-S) scale is an 8-item self-report with improved psychometric properties (12).

To achieve high performance in any domain researchers have found that in addition to inborn talent it requires setting long term goals, deliberate practice, systematic and consistent effort, all elements of grit (11, 13). Deliberate practice consists of the person seeking immediate feedback to identify shortcomings and then develop specific abilities by working to close the gaps (14, 15, 16). This type of practice is a typical characteristic among gritty people. Gritty people will push themselves continuously along the bumpy road of deliberate practice to achieve their long term goals (10).

Similar to grit is the ability for an individual to bounce back from failure and adversity (27). Many studies have described this as resilience with many of the same factors that describe gritty people. Grit, in this regard, consists of "working strenuously towards challenges, maintaining effort and interest over years despite failure, adversity and plateaus in progress" (11).

In a study of Australian elite youth soccer players by Larkin, O'Connor and Williams (22) grit scores and their correlation with several factors of performance were examined. The researchers found that the level of grit positively correlated with the time spent in sport-specific activities. It was also determined that the grittier players outperformed less gritty players on decision making and situational probability tasks. In another study, Fletcher and Sarkar (17) interviewed 12 Olympic champions, examining the relationship between sport performance and resilience. The researchers found that elite athletes could cope with negative stressors by viewing a setback as a positive event. More recently, Cazayoux and DeBeliso (7) found that elite Crossfit athletes score significantly higher on the 12-item Grit scale as well as the consistency of interest (CI) subscale when compared to novice Crossfit athletes. The authors suggested that "Crossfit athletes looking to compete at the Crossfit Games might intentionally use CI, or the ability to stay focused on one goal, as a competitive advantage".

Consistent with the notion of grit in relation to sport performance, it would seem reasonable to suspect that playing North American football at the professional level would require a gritty-athlete. The quarterback (QB) position is arguably one of the most difficult positions to play in all of professional sports. To reach the professional level requires not only elite physical attributes but also a combination of mental and emotional tools. The journey to become a National Football League (NFL) QB requires unwavering commitment and confidence. Many of the men playing the QB position in the NFL started when they were young and have been training relentlessly to achieve the level that they are at. Their love of the game usually starts at a young age playing pickup games or organized youth sports and continues into the high school and the collegiate level. The hours that go into perfecting the physical performance side of the game as well as the mental understanding (football IQ) side of the game is likely daunting to most. It requires countless hours of deliberate practice which is training that is specific, goal oriented and purposeful (30). Gritty individuals are more likely to engage the

amount of deliberate practice that is required to achieve expertise (9). These journeys are usually met with adversity and challenges as the QB has to overcome obstacles, learn many lessons through failure, as well as be able to move on quickly from losses. It is usually in these moments where the QB's resilience is tested and fortified when they learn the lessons that propel them forward. The QB is required to perform in atmospheres that are full of the pressures of performance. The behaviors and thought patterns to perform under these circumstances is where they separate themselves from others. These are some of the many situations where grit is required to play QB in the NFL. Grit, in this regard, is the ability to withstand and even thrive on the pressure they experience (29).

The purpose of this study was to examine the grit-like characteristics exhibited by NFL QBs. This was accomplished by examining previously collected Flippen Profile™ assessment scores of NFL QBs. The Flippen Profile™ is used to discover the QB's beliefs about themselves. How a QB views himself in his competitive environment has a lot do with how the people around him perceive and respond to him. Through the Flippen Profile™ assessment 5 grit-like constructs were examined: endurance, urgency and intensity, self-confidence, need for encouragement and self-criticality. The Flippen Profile™ assessment profile has identified high levels of endurance, urgency and intensity and self-confidence as well as low levels of self-criticality and need for encouragement as an ideal balance for successful performance. These 5 grit-like constructs (or qualities) are defined contextually for the current study in the following paragraphs.

Endurance, in high levels as it pertains to the Flippen Profile™, can be defined as a person who is persistent, determined, and deliberate with a high desire to persevere. They remain committed and steady in the pursuit of whatever it is they have set their mind to do. The ability to stick to a task and stay persistent is important in all athletics especially those which require a high level of skill.

Urgency and intensity, as a construct, is the ability to keep a high level of focus on task accomplishment. If it's important to the athlete they will invest themselves mentally and emotionally to the task. Individuals who are task oriented define success and elevate performance based on task mastery, development of skills, gaining knowledge, exerting maximum effort and achieving the best performance. Task orientation is associated with improving the physical and tactical skills of the athlete (4) and is positively related to the view that success is attributed to motivation and effort (28). Performers possessing high markers for urgency and intensity are very self-driven individuals.

Self Confidence, when possessed in high amounts is a strong belief in one's self and being self-assured. One of the most consistent findings in peak performance literature is the significant correlation between self-confidence and successful sporting performance (16). Confident individuals tend to be more skilled and effective in using cognitive resources necessary for sporting success (19). Hays and colleagues (19) also states that confidence has also been linked to productive achievement behaviors such as increased effort and perseverance. This allows them to be comfortable with risk, which can be defined as behaviors that involve some

potential harm or loss but also provides an opportunity to obtain rewards (23). A strong sense of confidence has also been associated with the setting of challenging goals at the expenditure of maximal effort and perseverance to achieve those goals (5).

The definition of self-critical is the psychological tendency to engage in self-doubt and engage in negative self-talk. Self-critical individuals are constantly and harshly critical and demanding of themselves and are chronically concerned about the criticism and rejection from others (6). These tendencies can lead an athlete to view criticism from a coach as a personal attack. Performers who are highly self-critical tend to hold on to mistakes and possess excess amounts of self-doubt. These maladaptive behaviors can inhibit confidence levels and performance. Any time an athlete is too self-critical fear becomes an increased motivational factor and the athlete can be paralyzed by overanalyzing and self-doubt. Those whom are less self-critical may tend to be more resilient and confident. They can self-critique without doubting themselves or seeing themselves in a negative fashion.

Need for encouragement can be defined as the tendency to rely on encouragement from others as a form of support. Encouragement can be actively sought as the athlete needs the positive response to feel confident about their abilities or performance. When the athlete relies on the opinions of others to fuel their motivation or confidence they may take criticism too personally and engage in self-defeating behaviors to avoid conflict or disappointment from others. Grit is conceptualized as a stable trait that does not require immediate positive feedback (1), and as such, we view a low need for encouragement as a grit-like construct.

By examining the aforementioned 5 grit-like constructs (or qualities) we intend to identify to what degree NFL QBs currently possess/exhibit these constructs as well as to what degree they are found in the more veteran QBs who have had success in the NFL. If these 5 grit-like qualities are related to overcoming adversity and staying committed to long term goals, then men who play QB in the NFL should possess/exhibit these constructs. As such, it was hypothesized that advanced veteran QBs who have had success in the NFL would exhibit more ideal levels of grit-like qualities. To our knowledge this is the only study that has attempted to assess grit-like qualities in this elite population.

METHODS

Participants

The data presented in this manuscript are a retrospective examination of previously recorded data that was not collected for the purpose of research. The data was collected by the Flippen Group with the help of 3DQB Inc., a private QB training group that trained NFL QBs during the years (2012-2018). Prior to examining the previously collected data, a University Institutional Review Board (IRB) committee was contacted seeking an "exempt status". This study was approved as an exempt status examination of existing data that was not collected for the purpose of research by a University Institutional Review Board (IRB approval #08-062018a). This research was carried out fully in accordance to the ethical standards of the International Journal of Exercise Science as described previously (25).

The QBs (n=29) in this study each completed a Flippen Profile™ instrument while currently playing in the NFL or before they entered. All of these players were the starting QB for their universities during their college career for multiple seasons. All of the QBs but one were selected in the NFL draft. The one who was not selected in the draft was signed as an undrafted free agent.

The participants were broken into three groups based on a strata of active years in the NFL. The three categories are rookies to second year players (1-2 years; n=8), third to seventh year players (3-7 years; n=13), and veterans with ≥ eight years of playing experience (≥8 years; n=8). Those QBs with eight or more years of NFL experience are considered those that have been successful to varying degrees as a starting QB.

Protocol

The Flippen Profile™ assessment was used for data collection. The Flippen Profile™ is administered via an online platform that typically takes ≈15-20 minutes for an individual to complete. The Flippen Profile™ includes the assessment of the 5 grit-like constructs of endurance, urgency and intensity, self-confidence, need for encouragement, and self-criticality. The scores are based on a 0-100 scale which identifies the score against the average person with a score of 50 being the average. Each the 5 grit-like constructs has a desired level. The constructs of endurance, urgency and intensity, and self-confidence all have a desired level of high scores (≈70-95). The constructs of need for encouragement and self-criticality have desired low scores (≈10-35). The Flippen Group claims the Flippen Profile™ exhibits construct validity and has demonstrated internal consistency as well as test-retest reliability (18).

Statistical Analysis

The mean and standard deviation of the Flippen Profile™ assessment scores for the five constructs of endurance, urgency and intensity, self-confidence, need for encouragement, self-criticality were calculated for the years played categories (or strata) of: 1-2, 3-7, and ≥8 years. Given the low number of participants no inferential statistics were employed. Effect size (ES) calculations were conducted as described by Cohen (8). Statistics were carried out in Microsoft Excel 2016. The spread sheet of data was peer reviewed for accuracy as suggested by Al Tarawneh and Thorne (2).

RESULTS

The results of the Flippen Profile™ assessment for the QBs within years played strata 1-2, 3-7, and ≥8 years are provided in Table 1. None of the distributions departed from normality as skewness and kurtosis values for each construct across strata fell within the range considered as normally distributed (skewness $^{-}2 \leftrightarrow {}^{+}2$, kurtosis < 7) (24). Effect size differences between years played strata are provided in Table 2. The investigation of the results demonstrated that: the QBs scored favorably on all of the 5 grit-like constructs independent of years played, QBs with ≥8 years' experience scored the most favorably for endurance and the need for

encouragement, while QBs with 1-2 years' experience scored the most favorably for self-criticality.

Table 1. Flippen Profile™ construct assessment scores.

Construct	1-2 Years (n=8)	3-7 Years (n=13)	≥8 years (n=8)
Endurance	57.1±12.2	69.3±15.9	80.6±10.4
Urgency and Intensity	69.3±16.5	62.1±19.8	69.5±16.2
Self-Confidence	83.0±6.3	75.0±18.9	82.5±11.1
Need for Encouragement	24.3±11.9	22.5±16.0	17.1±12.7
Self-Criticality	18.1±10.5	21.5±17.2	21.0±13.7

Mean±SD: Median. Scales 0-100 where a score of 50 is considered as average.

Table 2. Flippen Profile™ construct effect size between years played strata.

Construct	1-2↔3-7 Years ES	3-7↔≥8 Years ES	1-2↔≥8 Years ES
Endurance	0.86	0.84	2.08
Urgency and Intensity	-0.39	0.41	0.02
Self-Confidence	-0.57	0.48	-0.06
Need for Encouragement	-0.12	-0.38	-0.58
Self-Criticality	0.24	-0.03	0.24

ES-effect size as described by Cohen, 1988 (8).

DISCUSSION

The purpose of this study was to examine the levels of grit-like qualities in NFL QBs. Five grit-like constructs including endurance, urgency and intensity, self-confidence, need for encouragement, and self-criticality among NFL QBs were assessed with the Flippen Profile™ assessment. The path to becoming a NFL QB along with the challenges presented while playing the position would suggest that an athlete would need to possess ideal levels of grit-like qualities that would persist for many years. Likewise, it was hypothesized that more veteran QBs who have had success in the NFL would exhibit more ideal levels of the grit-like qualities. For the purpose of the current study, ideal (or desired) levels of the 5 grit-like constructs were assumed to be reflected by the constructs of endurance, urgency and intensity, and self-confidence exhibiting higher scores (≈70-95: scale of 0-100,). Conversely, for the constructs of need for encouragement and self-criticality it was assumed that ideal scores would be lower (≈10-35: scale of 0-100).

The collective results of the data examined support the notion that NFL QBs on average exhibit ideal levels of grit-like qualities and that advanced veteran QBs who have had success in the NFL exhibited more ideal levels of the grit-like qualities.

The QBs with ≥8 years of playing experience scored the highest for endurance. Likewise there appeared a pattern of increasing endurance scores that progressed across the years played strata. The ES differences in endurance scores between years played strata are as follows: 1-2↔3-7 years (ES=0.86), 3-7↔≥8 years (ES=0.84), and 1-2 ↔≥8 years (ES=2.08). The aforementioned ES increases in endurance scores between the years played strata are

considered as "large" (8) and suggests that the capacity to "endure" is associated with increasing years played in the NFL. Based on the aforementioned results it might be hypothesized that one of the primary reasons that the QBs in the ≥8 years played strata have been able to play for as long as they have is because of their ability to be persist (or endure). Noting that the construct of endurance for the purpose of the Flippen Profile™ is defined as a person who is persistent, determined, and deliberate with a high desire to persevere. The authors of the current study consider endurance as directly analogous to the Grit subscale of PE (12).

The grit like qualities of urgency and intensity were approximately equal between the years played strata of 1-2 and ≥8 years (ES=0.02). The urgency and intensity scores for the 3-7 years played strata were less than both the 1-2 and ≥8 year's strata (ES≈0.40). Possible reasons might include that 1-2 year players are pressing hard to simply make it in the NFL. While conversely, the most veteran players (≥8 years) may view their remaining playing years as growing short. As such, their elevated sense of urgency to reach a Super Bowl is facilitated by the realization that there is a collapsing window of opportunity.

A similar finding was that of self-confidence between the years played strata of 1-2 and ≥8 years (ES=-0.06). One possible explanation maybe that many of the 1-2 year QBs had taken the test after they have come out of college and before playing in any NFL games. It may be reasonable to assume that their levels of self-confidence were high because they had just ended a successful college career and had not yet endured any adversity at the professional level. It is also worth noting the relatively small standard deviation in self-confidence scores among the 1-2 year QBs suggesting very little variability in self-confidence among the QBs in the 1-2 year strata. It would also seem reasonable to hypothesize that the self-confidence levels of the ≥8 year veteran group would be high (which is supported by the data collected in the current study). The results of the current study suggest that regardless of the adversity and challenges that the ≥8 year veteran QBs have faced throughout their careers, they have maintained high levels of self-confidence. This same notion may be the reason why the 3-7 year QBs exhibited a lower self-confidence score. It is possible the 3-7 year QBs are experiencing mid-career challenges and adversity which may be negatively be impacting self-confidence.

The ≥8 year veteran QBs scored the lowest for need for encouragement indicating they needed less encouragement than the other two years played strata. Likewise, there appeared a pattern of decreasing need for encouragement scores across the strata of years played. The effect size (ES) differences in need for encouragement scores between years played strata are as follows: 1-2↔3-7 years (ES=-0.12), 3-7↔≥8 years (ES=-0.38), and 1-2↔≥8 years (ES=-0.58). The aforementioned ES decreases in need for encouragement scores between the years played strata are considered as "small" to approaching "medium" (8) and suggests that the "need for encouragement" is negatively associated with increasing years played in the NFL. The aforementioned results also suggest that the QBs in the ≥8 years played strata have been able to perform and function without the need for consistent positive external feedback. It is possible that the ≥8 year's veteran QBs are capable of providing a form of intrinsic positive feedback for themselves as they have acquired enough experience while also maintaining high

levels of confidence. In other words, they know when they have done a good job or could do better, and that knowledge may serve in place of positive external encouragement. The 1-2 year QBs scored the highest for the need for encouragement. The 1-2 year QBs had the least NFL experience and as such may require more encouragement in the earlier stage of their careers. Further, a generational trait may be a factor in that today's younger QBs may look for more affirmation from external sources. The aforementioned notion is supported by prior research which indicates that members of generation *Z* "require constant feedback on their activity" while in the workplace (21).

The 1-2 year QBs scored the lowest for self-criticality while the 3-7 and ≥8 year QBs scored essentially the same. The effect size (ES) differences in self-criticality scores between years played strata are as follows: 1-2↔3-7 years (ES=0.24), 3-7↔≥8 years (ES=-0.03), and 1-2↔≥8 years (ES=0.24). The aforementioned ES difference in self-criticality between the 1-2 year QBs and the other two years played strata are considered "small" (8). However, others consider ES≈0.20 as the "minimum clinically (or practically) important difference" (32). We contend that what is typically considered as a small ES can be rather meaningful when dealing with elite level world class athletes. This notion is consistent with prior researchers (20) who documented a ≈1% annual improvement in throwing distance among world class throwers. The difference in self-criticality scores between the 1-2 year QBs and the other two years played strata was ≈15.8%. An explanation for the 1-2 year QBs scoring lowest on self-criticality maybe a residual effect in that these QBs have recently completed a very successful collegiate career and find themselves less self-critical.

As in all sports the ability to persevere and to bounce back from adversity and setbacks can be a defining characteristic on the road to success. The QB position, especially, requires that the athlete be able to bounce back from mistakes made early in a game, or previous games, and continue to perform at a high level. They also must overcome losses and stay in the right mindset and emotional zone to be able to perform their best in the next game. Individuals high in grit are thought to better utilize their capabilities because they are less discouraged by failures and setbacks comonly encountered (9). A common phrase among QBs is "short term memory", which refers to the ability to let go of mistakes, losses or poor decisions quickly to maintain complete focus on the current circumstance. Quaterbacks also have to live in an environment of risk where their mistakes can be costly. They have to learn to walk the fine line between aggressive decision making, which can be risky and adversely affect the team, and overly protective decision making, which at times has its benefits but can also be a risk when the team fails to generate scoring opportunities. Therefore, to perform at a high level requires a great deal of resilience. Sarkar and Fletcher (29) investigated the stressors that athletes encounter and the protective factors that help them withstand the demands. Their research and synthesis of past research in the area of sport resilience demonstrated that through the use of psychological factors such as confidence, motivation, and focus the athletes were able to protect against the potetntial negavitve effects of stressors (a term they use rather than the term adversity). These same psychological factors are well aligned with the grit-like constructs examined in the current study.

A 30,000 foot view of the data suggests that the ≥8 years played QBs scored most favorably for the grit-like qualities of endurance and need for encouragement. Likewise the ≥8 years played QBs scored equally favorable as either of the other years played strata for the grit-like qualities of urgency and intensity as well as self-confidence. The aforementioned findings suggest that the most veteran QBs (who have found a way to consistently play at a high level in the NFL) tend to exhibit the most favorable grit-like qualities. It is not a stretch to imagine how grit-like qualities contribute to the success of a QB in the NFL; consider the following. Not only is it difficult to reach the professional level but to consistently perform at a high level for that many years requires extreme dedication and commitment to a purpose. Not only must a QB prepare each year for the challenge of playing a full NFL schedule but they must also navigate through the challenges that come on each team and with every game they play. Players are lost to injury, coaching changes happen, defenses are always adapting which require at times philosophical adjustments and the QB has to learn to adapt and find ways to deliver efficient performances.

A direction for future research would be to track the development of grit-like qualities throughout a QB's career. In the current study we examined a cross-section of NFL QB's grit-like qualities relative to years of experience in the league. Future research could focus on a longitudinal study where by a QB takes the Flippen Profile™ assessment in year one or before they enter the NFL then follow up with succeeding administrations of the Flippen Profile™ as they advance in their career. This type of research could provide insight into the effect that playing QB in the NFL has on the development of grit-like qualities over time. Likewise, such a study might provide insight into a developmental model to enhance grit-like qualities in QBs.

Future research might also focus on the developmental years of childhood and adolescence as related to grit-like qualities. For example, does playing the position of QB throughout childhood and adolescence develop grit-like qualities or do young men who choose to play the QB position already have developed traits of grit? Said another way, do individuals attracted to the play the position of QB inherently exhibit the grit-like qualities needed to succeed in the sport?

Finally, we would like to comment of the analysis of the data, presentation of results, and the culminating discussion presented above. There are 32 NFL teams which typically roster on average 3 QBs. This is usually by the team carrying 2 active roster QB's and 1 practice squad QB, or 3 active roster QB's with potentially another carried as a practice squad QB. As such the entire population of NFL QBs is relatively small (n≈96). The current study included 29 NFL QBs which is also a limited participant pool for a cross-sectional study for the purpose of statistical analysis. However the participant pool represents roughly 30% of the entire population of NFL QBs, which in most cases would be considered as a rather large pool of participants based on percentage of the total population under investigation. We choose not to use inferential statistics to analyze the data for several reasons. First is in regards to a low *n* in the three categories of years played which can lead to erroneous p-values and "not statistically significant results can be practically or clinically meaningful" (32). Second, the participant pool

is of such a high percentage of the total population, to whom would the results of the statistical analysis be inferred to? Further, there are growing concerns regarding the reproducibility of research (26) and the over reliance upon p-values as the mechanism of evaluating the outcome of a research endeavor (3). As a counter measure, the American Statistical Association (31) suggests "a variety of numerical and graphical summaries of data". We provided an analysis of distribution normality (skewness and kurtosis), central tendency (mean), variability (SD), ES differences between years played strata, as well as an ethnographic perspective/interpretation of the study results. The ethnographic perspective of the primary author cannot be over stated. The primary author of the current study played QB in Division I NCAA football (4 years), NFL (6 years), CFL (2 years), and is the partner of an Elite Professional QB consulting/coaching firm (6 years). The primary author's insight into the grit-like qualities he has personally experienced and directly observed allowed for a unique opportunity to link the numerical data collected in the current study via the Flippen Profile™ assessment with the in depth experiential knowledge of the primary author. We realize that some may not agree with our strategy regarding the analysis of the study results and that all research results have a certain level of inherent uncertainty. With that said, the data presented in table 1 is available for the reader to digest.

The practical applications of the findings of the study would be to administer the Flippen Profile™ to a young QB to identify the current level of grit-like qualities. When less than ideal grit-like constructs are identified, the athlete could then be coached on those specific grit-like constructs for improvement. In our opinion, younger QBs will need to develop a foundation of grit-like qualities in order to face the challenges on the path to success. Quarterbacks face a gauntlet of obstacles/challenges and the effort invested in preemptively developing grit-like qualities may be the determinant between a long career of success or under achievement of potential. For coaches, team owners, and other shareholders who are attempting to determine if a QB will be capable of performing and succeeding at the next level, be it collegiately or professionally, outside of physical tools the identification of grit-like qualities through the Flippen Profile™ will give them an insight into how the athlete will handle failure, disappointment and setbacks. It will also give insight into how dedicated and determined the athlete will be in the pursuit of their goals and if they currently possess the level of perseverance it requires to succeed at high levels of competition.

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