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THE RELATIONSHIP BETWEEN HEALTHY EATING ATTITUDES AND NUTRITIONAL KNOWLEDGE AMONG YOUNG CONSUMERS

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ABSTRACT

South Africa faces an obesity challenge. Given these high obesity levels and nutritional challenges there is need to ascertain the link between consumer attitudes and knowledge of nutrition since they influence eating behaviour. The aim of this study was to investigate the relationship between consumer attitudes and nutritional knowledge among a sample of young people residing in rural areas (n=150) in the Eastern Cape Province of South Africa. A self-administered questionnaire was used to measure attitudes towards healthy eating and their nutritional knowledge. Established measures were used for healthy eating attitudes, nutritional knowledge and attitudes towards nutrition. The results revealed that positive and negative attitudes towards healthy eating existed amongst the participating young people. Further, findings showed young people's attitude towards healthy eating to be related to nutrition knowledge acquisition. Recommendations are made based on these findings.

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INTRODUCTION

South Africa has a growing population, and this is particularly noticeable among the cohorts of young people (Duffett, 2017; Statistics South Africa, 2019). Given this growing population, there is need to pay attention to issues specific to such a population group. Young people in South Africa currently face a myriad of challenges, the main being unemployment (Coetzee, 2014). Such challenges include

issues around obesity (Feeley *et al*., 2011). Further, young people face challenges that relate to their consumption behaviours (Rousseau & Venter, 2014) but also the issue of nutrition knowledge (Xazela *et al.,* 2019). Related to this, others add (e.g., Moaadeli *et al.,* 2015) that young people will often face challenges of a health nature due to their consumption behaviours.

Another compounding issue that may affect issues concerning healthy lifestyles concerns geographical location. There is evidence showing for the importance and the need to pay attention to rural communities in understanding health issues (Xazela *et al.,* 2019). Such communities constitute an important nation-building agenda especially given the socio-historical challenges in South Africa (Moaadeli *et al*., 2015). Despite this noted importance, studies in rural communities remain not only scant but also warranting further attention (Govender *et al.,* 2016). There is therefore need to pay attention to efforts in addressing such challenges. Adherence to a healthy diet and practices that promote good health can assist to address the presented challenges.

A key issue is to pay attention in promoting good nutrition habits and acquisition of nutrition knowledge (Moaadeli *et al*., 2015). Nutrition knowledge is believed to influence not just the decisions about food choices but also healthy lifestyles (Nawaz, *et al*., 2016). A number of young people tend follow an unhealthy lifestyle (Stockton & Baker, 2013). These unhealthy lifestyles include: a) skipping meals; b) eating a lot of processed foods; c) reduced fruit and vegetable intake and d) an increase in the consumption of fried foods (Yun *et al.,* 2018). This could be the leading cause of illness and death especially amongst young people (Barnes *et al*., 2012). A need therefore exists to initiate positive attitudes toward healthy eating, enabled by nutrition knowledge in changing negative dietary habits (Abraham *et al*., 2018). Therefore, this study sought to provide information on the relationship between young consumers' nutritional knowledge and their attitudes to healthy eating.

The rest of the paper follows a structure. First, the contextual background to the study is presented. This is followed by the theoretical and empirical literature that underpins this study including the hypotheses development. Third, the methodology was adopted is then presented. Finally, the paper presents the findings and the discussion around this.

CONTEXT OF THE STUDY

The aim of the study is to provide information on the relationship between attitude and nutrition knowledge amongst young people residing in rural communities. Young people often face a challenge concerning issues related to nutrition including healthy eating. Calls exist for an empirical focus on understanding better such challenges that affect young people (World Health Organization [WHO], 2014). Further, possible issues of interest here could for instance be focused on understanding not just the role of individual but also contextual factors in shaping nutrition choice especial ling amongst young people (Hampshire *et al*., 2015). At play here could also be the need to understand the role that knowledge plays including underlying attitudes on nutrition knowledge (Worsely, 2002). The next section presents the theoretical and empirical literature around these highlighted issues.

THEORETICAL LITERATURE

Affective cognitive consistency theory examines the relationship between attitudes and beliefs (Festinger, 1950). The theory addresses the effective and cognitive impact of new information that is consistent or inconsistent with the individual's prior beliefs (Gigerenzer & Garcia-Retamero, 2017). This theory is concerned with what happens within the individual when an attitude changes. Borrowing from Festinger (1950), attitudes are either positive or negative evaluations made by individuals of an experience or idea. The affective cognitive

consistency theory provides a framework by which to explore eating habits and nutrition knowledge in view of context (Festinger, 1950). Thus, by this an inference can be made that young people's attitudes towards healthy eating can be changed by influencing nutrition knowledge and the benefits of eating healthy. Additionally, providing an individual with the information that changes the cognitive component of attitude will tend to cause that individual to change their overall attitude towards an object (Kruglanski *et al*., 2018).

EMPIRICAL LITERATURE

Dietary attitudes are affected by many factors, which include household income (Vaughan *et al*., 2018); education level (Choi *et al*., 2008); age (Whitehead, 2016) and nutrition knowledge (Cannoosamy *et al.,* 2016). Miller *et al*. (2015) highlighted that young adults who have a negative attitude towards cooking are less likely to prepare food. This may result in them simply purchasing processed foods. An individual's gender may affect attitudes toward food, body image, and eating behaviours (Nawaz *et al*., 2016). Linked to this, previous research also shows that females have higher mean ratings of nutrition knowledge than males (Abraham *et al*., 2018; Nawaz *et al*., 2016). In general, it can be assumed that as nutrition knowledge increases, the intake of unhealthy foods decreases (Nawaz *et al*., 2016).

Abraham et al. (2018) investigated a group of 121 young college females to find out if they were knowledgeable regarding aspects of nutrition. The results of the survey showed that respondents had a fair knowledge of nutritional requirements for health; however, their food choices are not necessarily healthy. However, existing literature is constant in indicating that young people are lacking in nutrition knowledge (Abraham *et al*., 2018; Nawaz *et al.,* 2016).

Moreover, there is agreement among researchers that nutrition knowledge is one of the variables that affects the nutrition status and dietary habits of individuals (Whitehead, 2016). A review of past studies shows that females are more concerned about healthy eating as they are more conscious about their physical appearance (Nawaz *et al.,* 2016). Some researchers have found that nutrition knowledge was positively related with making healthy food choices (Abraham *et al.,* 2018; Nawaz *et al.,* 2016).

Based on the findings and debates from previous studies, calls have been made for further research on nutrition knowledge, attitudes toward and beliefs about nutrition, and for nutrition intervention among young people, especially those factors that influence healthy eating (Abraham *et al.,* 2018; Partida *et al.,* 2018; Whitehead, 2016). This situation formed the rationale for this study. Generally, there is little information on the relationship between young consumer attitudes towards nutritional knowledge in rural communities and hence the study aims to fill this gap.

By summary, pockets of the empirical literature appears to argue that nutrition education is critical and can be used with success in promoting a healthy lifestyle. Thus, this research aspires to gather data around the espoused stated aims and make recommendations based on the findings. Based on this, the study hypothesised that:

H1: Attitude towards healthy eating is related to nutritional knowledge.

H2: Attitude towards nutrition is related to nutritional knowledge.

METHODOLOGY

The research adopted a positivist paradigm using a quantitative research approach relying on a survey research data collection technique. A convenience sampling approach was utilised. This meant respondents to the study were those who were most accessible and willing to participate in the data collection process. The

logic for using young people was informed by calls for research that seek to understand the lived experience of young people especially those in rural communities concerning nutrition issues (Xazela *et al.,* 2019). The respondents were approached at a youth centre frequented by young people. From this, the research team comprising also of research assistants asked if they were interested in the study. When a respondent agreed to participate, the enumerator explained the purpose of the study and the respondent signed the consent form. Through this sampling approach, a total of 150 questionnaires were collected. Of the 150 respondents, 65 were males and 85 were females.

Concerning the instrument, a pilot study was used before the main data collection. The pilot study served the purpose to also test potential respondents understanding of the questions in the instrument. Also, the pilot study served as useful training ground for the research assistants in getting them experience before the main study. The feedback from the pilot study was useful in not only preparing for the main data collection but also training members of the research team.

Concerning the variables under-study, attitude towards healthy eating, one of the independent variables (IV) was measured on a seven-point Likert scale made up of seven items. An example of an item on the questionnaire reads as follows, "It is important that the food I eat keeps me healthy". The study's dependent variable (DV), namely nutrition knowledge, was measured on a four-point Likert scale with 12 items. An example of the scale items reads, "To you personally, is it ……. to use salt or sodium only in moderation". Possible responses ranged from 4 = very important to 1 = not at all important. Furthermore, a scale for measuring attitude towards nutrition made up of four items each with its own four varying responses was also incorporated. The scales used for the survey were all adapted from previous studies (Nawaz *et al.*, 2016; Xazela *et al.*, 2019). The reliability score making use of the Cronbach alpha for the attitude towards healthy eating (HE) scale was found to be .74, nutrition knowledge scale .71, and attitude towards nutrition scale .78, another IV of the study.

Ethical considerations

This study was approved by the participating university's ethics committee and ethical clearance was granted. Four main ethical principles were adhered to by the research team. First, all participants gave consent before participating in the research and no one was coerced to be part of the study. Second, all information and intended purpose of the research were declared to participants including the goals and objectives of the study. Third, respondent participation was voluntary. Finally, the research team comprising of research assistants informed respondents of strict adherence to issues of confidentiality and anonymity.

RESULTS

Concerning the descriptive results, the following will be reported by gender, age and ethnicity. Respondents by gender shows that 43% of the respondents were male and 57% of the respondents were females. Respondents were also surveyed by age. The results show: a) those aged 18 years and below giving a tally of 3%; b) those between the age of 19 to 25 giving a tally of 43%; c) those between the age of 26 to 30 giving a tally of 47% and finally, d) those aged 31 and above gave a tally of 7%. Table 1 also provides respondent responses on their attitudes towards healthy eating.

Responses in Table 1 on questions about attitude towards healthy eating indicate that 32.9% of the respondents strongly disagreed with the idea that it is important that the food they eat should keep them healthy. However, 26.2% and 14.8% indicated that it is very important to them that the food they eat should at least keep them healthy. The responses to this question portray both a negative and a

TABLE 1: DISTRIBUTION OF RESPONSES TO THE ATTITUDE TOWARDS HEALTHY EATING QUESTIONS (%)

Question	Strongly Disagree	Disagree	Some what Disagree	Neutral	Some what agree	Agree	Strongly agree
It is important that the food I eat keeps me healthy	32.9	5.4	10.7	2.7	7.4	14.8	26.2
It is important that the food I eat is nutritious	4.7	29.3	4	4.7	6.7	18.7	32
It is important that the food I eat contains vitamins and minerals	5.3	3.3	30	5.3	4	23.3	28.7
It is important that the food I eat helps me control my weight	28	8	3.3	1.3	4.7	23.3	31.3
I always follow a healthy and balanced diet	43.3	4.7	2	10.7	5.3	12	22
I eat what I like and I do not worry about healthiness of food	40.7	9.3	-	16.7	5.3	6	22
The healthiness of food has little impact on my food choices	20.7	19.3	20	10	7.3	5.3	17.3

positive attitude towards healthy eating among young people.

Surprisingly, 29.3% of the young people that took part in the research also showed a negative attitude towards nutritious food as they disagreed that it is important for the food they eat to be nutritious. Nevertheless, a large group (32%) strongly agreed that it is important for the food they eat to be nutritious, while 18.7% agreed with this notion. Thirty percent of the respondents somewhat disagreed that it was important for the food they ate to contain vitamins and minerals, while 23.3% indicated that they agreed and 28.7% also indicated that they strongly agreed with the statement. To the question regarding the importance of food, being an aid in weight control, 31.3% strongly agreed and 23.3% agreed while 28% strongly disagreed.

The young people participating in this research were further asked if they always follow a healthy and balanced diet. A total of 43.3% indicated that they do not always follow a healthy and balanced diet. However, 12% and 22% agreed and strongly agreed respectively, indicating young people had a somewhat positive attitude towards a healthy diet. When asked whether they just eat what they like without worrying about the healthiness of food, 40.7% of the young people strongly disagreed while 22% strongly agreed. When asked if the type of food being categorised as being healthy or unhealthy as informing food choice, 40% of the young people generally disagreed

The responses in Table 2 regarding the young people's attitude towards nutrition and indicates that 82% considered nutrition to be important for their health respectively. However, 13.3% indicated that they were not sure whether nutrition is important for their health or not. The young people participating in the study were also asked to indicate the aspects they considered most important when they are buying food items.

The majority of respondents (54.7%) indicated that balanced nutrition is the most important aspect and 29.7% rated quality as the most important aspect. Those who rated the brand's popularity as important constituted 13.3%. The young people were also asked to indicate which aspect they want to know the most about the food items they buy. The majority of respondents (51.7%) indicated that the nutrition content of the food item is the most important aspect they wish to know about when they make their purchases, 23.1% indicated food safety as the most important aspect, 17% of the young people indicated that the taste of the food they purchase is the most important aspect and 8.2% said they consider the appearance of the food as the most important aspect when they are buying food items. The last item sought to establish the attitude of the young people towards expired food items and 59.7% indicated that they throw away all expired food items. Another interesting finding was that 14.6% of the young people indicated that they do not care at all about the expiration date on the food items while 2.1% of the respondents indicated that

TABLE 2: DISTRIBUTION OF THE RESPONSES TO THE ATTITUDE TOWARDS NUTRITION QUESTIONS (%)

	Response options and statistics			
Question	***Very important***	***Important***	***Not sure***	***Not important***
In your opinion, is nutrition important to your health?	33.3	48.7	13.3	4.7
Question	***The brand is famous***	***The quality is good***	***The nutrition is balanced***	***The package is exquisite***
Which aspect do you think to be the most important aspect when you are buying foods?	13.3	29.3	54.7	2.7
Question	***Food safety***	***Nutrition issue***	***Food taste***	***Food appearance***
Which aspect do you want to know most?	23.1	51.7	17.0	8.2
Question	***Do not care about the expiration date of food***	***Throw away***	***Continue to eat only if expiration date has surpassed by 1 or 2 days***	***Continue to eat if there is no obvious qualitative change***
What is your attitude to expired food?	14.6	59.7	23.6	2.1

TABLE 3: SIMPLE REGRESSION MODEL FIT AND SUMMARY FOR ATTITUDE TOWARDS HEALTHY EATING BASED ON NUTRITION KNOWLEDGE

Source	**df**	**Sum of squares**	**Mean square**	**F value**	**Pr>F**
Regression	1	.478	.478	7.104	.009*
Residual	149	9.144	.067		
Total	150	9.622			
Model Summary					
Observations			136		
R (Est. standard error)			.05(.25930)		
R^2(Adjusted R^2)			.05(.043)		
F Change (Sig. F Change)			7.104(.009)		
Durbin-Watson Test – Test for auto correlation			1.820		
Coefficients					
Parameter estimates	**Unstandardised coefficients**		**Standardised coefficients**		
	B	SE	B	t	Sig
Constant	3.450	.051		67.999	.000*
Attitude towards HE	-.031	.012	-.223	-2.665	.009*

*Significant fit. Note: independent variables: Constant, Attitude towards HE, Dependent variable: Nutrition knowledge.

they continue to eat the food if there is no obvious change in the quality of the expired food items.

To test the study's hypotheses (H1 and H2), the simple linear regression analysis was undertaken. To evaluate the robustness of the models, the Durbin-Watson test for auto-correlation was employed and to test the assumption of homoscedasticity and normality of residuals, special plots (Q-Q plots) were relied upon. In relation to H1, stating that attitude toward healthy eating predicts nutrition knowledge, results of the simple linear regression in Tables 4 and 5 provide major insights of the model.

To establish whether a linear relationship between attitude towards healthy eating and nutritional knowledge exists, a simple linear

TABLE 4: SIMPLE LINEAR REGRESSION MODEL FIT AND SUMMARY FOR ATTITUDE TOWARDS NUTRITION AND NUTRITION KNOWLEDGE

Source	df	Sum of squares	Mean square	F value	Pr>F
Regression	1	.820	.820	12.614	.001*
Residual	149	8.513	.065		
Total	150	9.332			
Model Summary					
Observations			133		
R (Est. standard error)			.296(.25492)		
R^2(Adjusted R^2)			.088(.081)		
F Change (Sig. F Change)			12.614(.001)		
Durbin-Watson Test – Test for auto correlation			2.152		
Coefficients					
Parameter estimates	**Unstandardised coefficients**		**Standardised coefficients**		
	B	SE	B	t	Sig
Constant	2.789	.156		17.916	.000*
Attitude towards nutrition	.193	.054	.296	3.552	.001*

*Significant fit. Note: independent variables: Constant, Attitude towards HE, Dependent variable: Nutrition knowledge.

regression model was examined. Attitude towards healthy eating was the explanatory variable and this resulted in a significant model (F = 7.104; p =.009). The model fit and model summary statistics are listed in Table 3 which shows that attitude towards healthy eating explains a significant amount of variation in nutritional knowledge (R^2 = .05; R^2 adjusted = .043). The Durbin-Watson d observed as 1.80. This value falls between the required range of $1.5 < d < 2.5$. Given these results, it can be concluded that there is no first order linear auto-correlation in the data.

Results in Table 4 reveal the parameter estimates of the model indicating that there is a significant negative relationship between attitude towards healthy eating and nutritional knowledge, with the constant term (β_0 = 3.450; t = 67.999; p = .000) and the main effect of attitude towards healthy eating on nutrition knowledge (β_1 = -.031; t = -2.665; p = .009). In other words, as attitude towards healthy eating increases by one unit, nutritional knowledge among the young people decreases by .031 units.

From the given results, there is sufficient evidence at the 5% level of significance indicating that attitude towards healthy eating predicts nutrition knowledge among the participating young people to this research. Further, to establish whether a linear relationship between attitude towards nutrition is related to nutrition knowledge exists, a simple linear regression analysis was undertaken and its output was examined. Attitude towards nutrition was the explanatory variable and this resulted in a significant model (F = 12.614; p = .001). The model fit and model summary statistics are displayed in Table 4.

In the model, attitudes toward nutrition showed a significant amount of variation in nutritional knowledge of the participating young people (R^2 = .088; R^2 Adjusted = .081). The Durbin-Watson d was observed as 2.152 and is between the two critical values of $1.5 < d < 2.5$ indicating that there is no first order auto-correlation in the data used to compute the simple linear regression analysis.

The results displayed in Table 4 reveal the parameter estimates of the model to be statistically significant. It can be observed in Table 4 that the constant term (β_0 = 2.789; t = 17.916; p = .000), with the main effect of attitude towards nutrition based on nutritional knowledge observed as follows: β_1 = .193; t = 3.552; p = .001. Given that the β_1 coefficient is positive

and statistically significant, there is enough evidence at the 5% level of significance supporting the notion that attitude towards nutrition predicts nutritional knowledge among young people. The results indicate that as attitude towards nutrition increases by 1 unit, nutritional knowledge also increases by .193 units.

DISCUSSION

The aim of this study was to investigate the relationship between consumer attitudes and nutritional knowledge among a sample of young people residing in rural areas in the Eastern Cape Province of South Africa. The results found the existence of a significant negative relationship between attitudes towards healthy eating and nutritional knowledge. In other words, as attitude towards eating increases, nutrition knowledge among young people decreases. Furthermore, although the young people participating in this research can have positive attitudes, they can also decide not to engage their nutritional knowledge concerning the making of nutrition decisions. A range of assumptions can be made as to why this is so. The first of these issues of an individual nature could relate with aspects of access to food or even contextual issues such as food security or the food environment. Generally, in the findings, young people's attitude towards healthy eating varied with 32.9% of the respondents who strongly disagreed, 26.2% who agreed and 14.8% who strongly agreed with the idea that it is important that food they eat should keep them healthy. Furthermore, the attitudes towards healthy eating explain a significant variation in nutritional knowledge. This implies that the young people from rural areas have an acceptable attitude towards healthy eating which could mean that healthy eating is related to nutrition knowledge. The results thus indicate that attitude towards healthy eating predicts nutritional knowledge amongst young people. In essence, the findings of the study show support to previous related studies (Xazela *et al.,* 2019).

In addition, the study's findings revealed that attitudes towards nutrition explains approximately 9% (R^2 =.088) of the variation in youth's nutrition knowledge levels. In other words, by focusing on attitudes towards nutrition the study successfully eliminated approximately 9% of the errors in predicting youth nutritional knowledge. As presented in the findings earlier, it was observed that with a unit increase in attitude towards nutrition, there is a statistically positive significant increase in youth's nutritional knowledge equivalent to 19.3% (β_1 = .193). The findings of the study are consistent with Festinger's (1950) affective cognitive consistency theory, which explains what happens within individuals given a change of attitudes. In the context of this study, a positive change in attitudes towards nutrition will result in a statistically significant and positive increase in nutritional knowledge levels among the youth in South Africa's rural areas.

The study's descriptive results also revealed some important issues worth discussing, for example, young people participating in this research indicating that they do not always follow a healthy diet when eating. This could mean that many of the young people residing in rural areas lack nutritional knowledge or that the challenges they face related to access of information on nutritional knowledge and healthy eating behaviours result in them not considering these nutrition factors or not regarding them as important. The findings also showed positive and negative attitudes towards healthy eating exists amongst the young people participating in this research. The other factor that could negatively impact attitude is the growing popularity and convenience of fast food consumption (Onurlubas & Yilmaz, 2013). Further, factors that could have an impact on food choice and eating behaviour are household income (Vaughan *et al.,* 2018; peer influences (Nawaz *et al.*, 2016); socio-economic factors, the socio-cultural milieu inclusive of environmental conditions and personal experiences (McQuaid, 2015); the role of mass media (Nawaz *et al.*, 2016); parental dietary patterns and demographic factors such age and

gender (Moaadeli *et al*., 2015). However, 29.3% of the study results do not provide a clear indication of what has caused this attitude amongst the young people.

Another point worth mentioning from the descriptive statistics findings relates to 14.6% of the youth revealing that they do not care about food's expiry date. In addition, the results further reveal that 2.1% of the youth continue to purchase and consume food items beyond their expiry date as long as the food item purchased does not show obvious signs of deteriorating in quality levels. It is difficult at this stage to establish why this is the case as it was beyond the scope of the study. Several reasons could lead to this practise, chief among them being poverty. Practically, expired food regardless of invisible signs that speak to the product deteriorating in quality is a potential health scare to any person who is mindful of what he/she eats. The continued consumption of expired youth poses two negative threats. The first threat is that it motivates retailers to break the law by providing shelve space for expired products which obviously must not be anywhere near the unaware and the alert customers. The second threat lies in the retailer's practices selling the expired products at the base price. This is meant to recover the costs incurred in the acquisition of such products. Some customers realising these low prices are enticed to hoard expired products in the process risking the health of customers. Practically, the youth or customers of all ages must desist from consuming such products and develop a positive attitude towards consumption of products, which do not pose risk on their health. Based on the nutritional knowledge, the youth should also report such retailers to the health authorities as customers have the right to consume safe products.

In terms of limitations, the results of the study cannot be generalised to the entire population that resides in rural communities. Another limitation concerns the scales used in this study, the scales used were mostly general and suited for an international audience. Future research could improve on this be designing localised scales relevant to the South African context. For instance, these localised scales could consider issues such as cost and culture that feature commonly in South Africa.

More studies can be done on nutritional knowledge by drawing comparisons between genders in rural communities. Future research could also take a qualitative research focus in understanding young people's attitudes towards healthy eating and nutrition knowledge. This can assist in not only unearthing but also understanding the complexity that accompanies such behaviours and attitudes. Despite all this, the study serves as a useful guide that suggests there is still a challenge in nutrition and eating healthily, specifically among young people.

CONCLUSION

The findings of the study have revealed that the relationship between attitudes towards healthy eating and nutrition knowledge is still a challenge. The study's results revealed that the relationship between attitude towards healthy eating and nutritional knowledge is negative and statistically significant. Further, the study found that the relationship between attitude towards nutrition and nutritional knowledge is positive and statistically significant. Based on the findings of the research, programmes on nutrition can be encouraged to assist young people in rural communities to better understand the importance of healthy eating and to change attitudes. Further, research can be done on a larger scale to determine their attitude toward healthy eating as this study did identify a positive attitude towards nutrition based on nutrition knowledge.

Dedication

This paper is dedicated to the memory of Dr Nomasonto Xazela (a co-author and lead investigator to this project). Dr Xazela sadly passed away during the write up of this paper. We thank her for the valued contribution and

commitment to the academic community in South Africa

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