

**Outlook towards Prosthodontic Treatment Protocol Decision-Making for Edentulous Patients among Dental Interns**

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**Abstract**

**Introduction:** The aim of this study was to describe Dental Interns outlook towards prosthodontic decision making for edentulous patients and identify whether there are gender differences in these outlooks.

**Materials and methods:** All the Dental Interns were invited to take part in the study and a previously piloted questionnaire was administered to them. The questionnaire posed questions based upon a treatment protocol scenario of discussing treatment options with patients.

**Results:** Ninety-one questionnaires were used in the analysis (91% overall response rate). Interns perceived their own values to be less important than the patient’s values ( $p < 0.001$ ) in decision making, but similar to the patient’s friend’s/relative’s values ( $p = 0.1$ ). In addition, they perceived the patient’s values to be less important than their friend’s/relatives ( $p < 0.001$ ). Sixty-six per cent of them acknowledged an influence from their own personal values on their presentation of material to patients who are in the process of choosing among different treatment options, and 87% thought their

edentulous patients were satisfied with the decision-making process when choosing among different treatment options. Fifty-eight per cent of them supported a strategy of negotiation between patients and clinicians (shared decision making). There was no strong evidence to suggest gender had an influence on the attitudes towards decision making.

**Conclusion:** The finding of a consensus towards shared decision making in the attitudes of interns, and no gender differences is encouraging and is supportive of dental schools' ability to foster ethical and professional values among dentists.

**Keywords:** decision making, implant supported prosthetics.

### **Introduction**

Decision making is a crucial part of healthcare delivery system. Clinicians need to address a wide range of factors prior to arriving at a decision that represents optimal care for their patient. These factors include clinical factors, patient values, the available research evidence, clinical guidelines, their previous clinical experience and medico-legal implications. The difficulty for patients, their accompanying persons and clinicians of considering the available information in order to make the optimal treatment choice is crucial. Three models of the clinician-patient relationship have been described [1]:

- Paternalism (traditionally the clinician makes decisions for the patient);
- Consumerism (primarily based upon patient preferences); and
- Shared decision making (whereby a consensus is reached).

Our legislation dictates that pursuing a strongly paternalistic decision-making style could leave a dentist vulnerable to the medico-legal challenge for failure to obtain valid consent for treatment [2]. Not fully

considering patients' wishes as part of the decision-making process and making judgements purely on technical factors, even if the decision is evidence based, represents a failure to respect the ethical principles of choice and free will, which are central to patients' fundamental rights. However, following a consumerist decision-making style could lead to situations where the patient requests treatment is not in consensus with what the clinician believes is in the patient's best interest [3]. Shared decision making (SDM) allows both parties to play an active role in the decision-making process and arrive at a decision through a negotiation [4]. A systematic review [5] of the effectiveness of SDM concluded that despite the considerable interest in applying SDM clinically, there is little research regarding its effectiveness. SDM is particularly suitable for long-term decisions [5], especially in the context of a chronic illness, and when the intervention contains more than one session. The edentulous state (loss of all teeth) is a chronic condition [6] and prosthodontic interventions will inevitably require multiple treatment sessions and long-term care. The SDM concept seems appropriate in such cases. Although there is little evidence that a dentist's gender has a role in their choice of decision-making style or the patient-dentist relationship [7], it has been reported that female doctors show a greater affinity for collaborative models of patient-physician relationship than do their male colleagues [8]. Treatment options for the edentulous patient include no treatment, conventional complete dentures, implant retained overdentures and implant supported fixed bridgework. Involving edentulous patients in prosthodontic decision making is essential due to the diverse range of functional outcomes [9], risk of complications and costs [10] associated with the various therapies. The amount of clinical decision-making experience that undergraduates develop in undergraduate



material to patients who are in the process of choosing among different treatment options?

Please circle your response from 1 to 7. (1=very important, 4=neutral, 7=very unimportant)

Very important                  neutral                  very unimportant

7. In general, how satisfied do you think your **edentulous patients** are with the decision-making process when choosing among different treatment options?

Please circle your response from 1 to 7. (1=very satisfied, 4=neutral, 7=very dissatisfied)

Very satisfied                                  neutral                  very dissatisfied

8. Ideally, how should clinicians and patients arrive at the optimal treatment option for the edentulous patient?

Please circle the most appropriate answer

- a) Choice of the best solution is fundamentally a technical decision; the clinician should make a strong recommendation to patients and seek their endorsement.
- b) Choice of the best solution is partly a technical decision and partly based on the clinician's preferences given what he/she knows about the patient
- c) Choice of the best solution results from negotiation between patients and clinicians after they have shared technical information as well as their preferences about the options
- d) Choice of the best solution is partly a technical decision and partly based on the patients' informed preferences, regardless of the clinician's preferences
- e) Choice of the best solution is completely based on the patient preferences; the clinician should only make sure the patient has adequate information about each option

9. Which of the following would best describe your response to an edentulous patient who in response to your

advice about treatment options asks, "what would you do if you were me?"

Please circle the most appropriate answer

- a) Inform the patient that my clinical concerns and

1	2	3	4	5	6	7
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preferences are likely different from theirs and decline to offer an answer.

- b) Share my own clinical concerns and preferences to clarify differences with the patient's circumstances and

1	2	3	4	5	6	7
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offer an answer as if I was choosing for myself.

- c) Answer the question as if I was the patient and use my own values/preferences to choose among the different treatment options.
- d) Answer the question as if I was the patient and use my interpretation of the patient's values/preferences to choose among the different treatment options.
- e) Answer the question as if I was the patient and use my interpretation of the average patient's values/preferences to choose among the different treatment options.

Pilot questionnaires were administered to four final year dental students and two general practitioners, and the questionnaire content was then revised.

**Study Sample:** All the dental interns (n=100) enrolled were selected as the study population. A google form was developed to conduct the study and this was further forwarded to the interns. A brief summary of the study was also included along with the link to the google form and was forwarded to each intern. They were given sufficient time to consider fully their choice to participate in the study and to complete the questionnaire if willing.

**Statistical Analysis:** The responses to each of the nine questions were summarised by proportions or median with range/inter-quartile range (IQR) as appropriate. Wilcoxon

signed rank tests were used to compare the interns' perceptions of the relative importance of the dentist's, patient's and patient's relative/friend views. Mann Whitney U tests were used to assess gender differences. All analysis was undertaken using SPSS 16.0 for Windows (Release 16.0.2).

### Results

Of the 100 questionnaires that were forwarded, five were not completed and four were returned blank as the interns wished not to participate; this allowed 91 (91% of those distributed) to be used in the analysis. The median age of respondent was 24 (range = 23–42) years, and 38% were male and 62% female. Figures 2–6 show the whole group summary of category percentages for Questions 3 to 7, while Table 1 (column 1) shows the median (IQR) values for these questions. With respect to the relative importance of the dentists', patient's, and patient's friend's/relative's values in decision making, the interns perceived their own values to be less important than the patient's values ( $p < 0.001$ ), but similar to the patient's friend's/relative's values ( $p = 0.1$ ). In addition, the interns perceived the patient's values to be less important than their friend's/relatives ( $p < 0.001$ ). Sixty-six per cent of interns acknowledged an influence from their own personal values on their presentation of material to patients who are in the process of choosing among different treatment options. Eighty-seven per cent of interns thought their edentulous patients were satisfied with the decision-making process when choosing among different treatment options. Table 2 (column 1) shows the interns' opinions on how treatment options should be decided upon, with the highest percentage (58%) supporting negotiation between patients and clinicians. Table 3 (column 1) shows the interns' responses to being asked "what would you do if you were me?", with the

highest percentage (38%) offering an answer as if the intern was choosing for themselves.

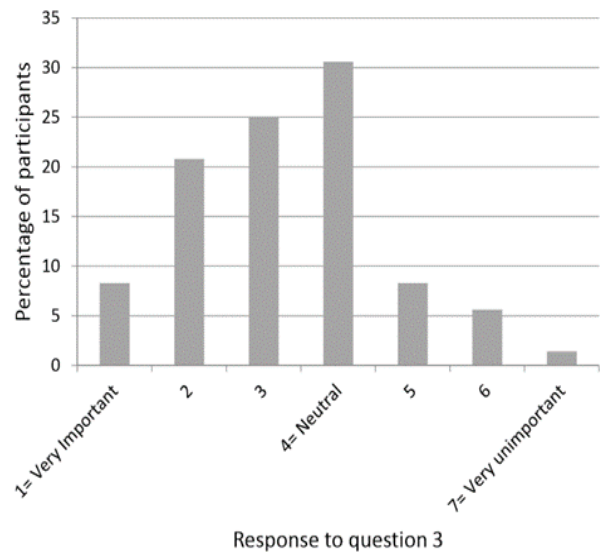


Figure 1: Participants' response to Question 3: "How important are your own values (beliefs, priorities & preferences) in helping edentulous patients make treatment decisions?"

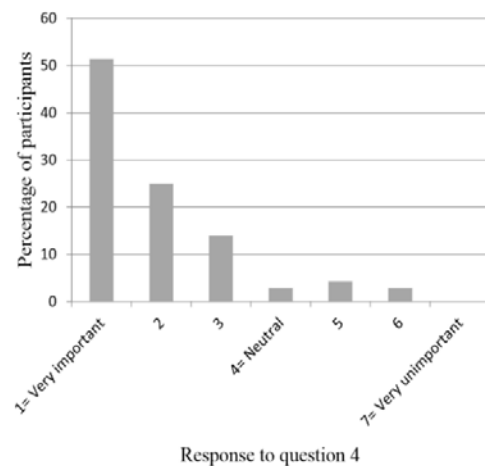


Figure 2: Participants' response to Question 4: "How important do you perceive the edentulous patient's values (beliefs, priorities, preferences) to be in making treatment decisions?"

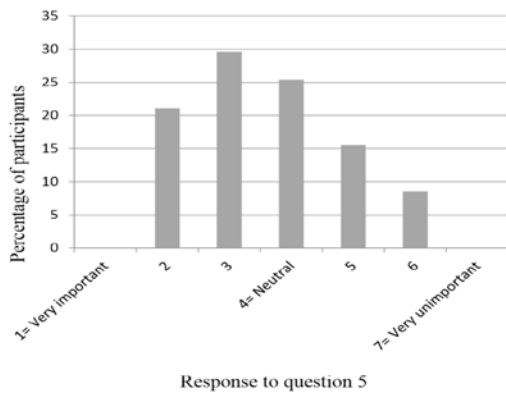


Figure 3: Participants' response to Question 5: "How important do you perceive the values (beliefs, priorities, preferences) of the edentulous patient's family or friends to be in making treatment decisions?"

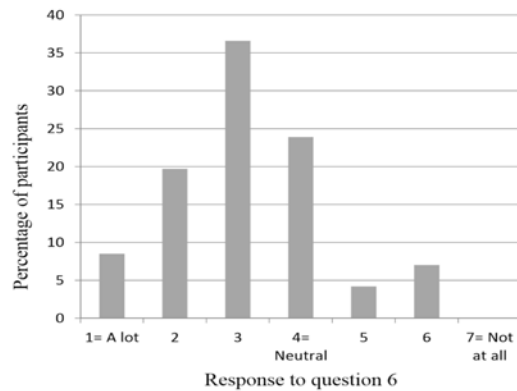


Figure 4: Participants' response to Question 6: "how much do your own personal values (beliefs, priorities & preferences) influence your presentation of material to patients who are in the process of choosing among different treatment options?"

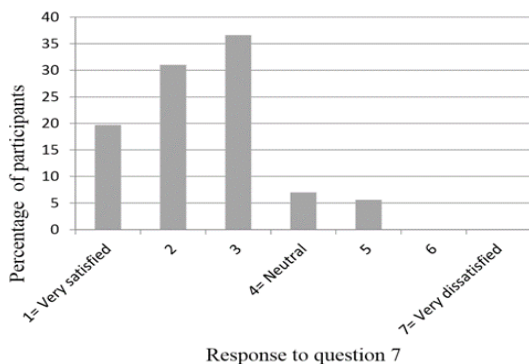


Figure 5: Participants' response to Question 7: "In general, how satisfied do you think your edentulous patients are with the decision-

making process when choosing among different treatment options?"

Table 1: Summary of participants' responses to Questions 3 to 7.

Question Number	Median Response on Likert Scale (Interquartile Range)			p-Value (Mann-Whitney U Test of Association between Gender and Response)
	Overall	Male	Female	
3	3(2,4)	3(2,4)	3.5(2,4)	p = 0.8
4	1(1,2)	2(1,3)	1(1,2)	p = 0.07
5	3(3,4)	4(3,5)	3(2,4)	p = 0.3
6	3(2,4)	3(3,4)	3(2,4)	p = 0.3
7	2(2,3)	2(1,3)	3(2,3)	p = 0.6

Table 2: Participants' responses to Question 8: "Ideally, how should clinicians and patients arrive at the optimal treatment option for the edentulous patient?"

Response Chosen by Participant	Percentage of Participants		
	Overall	Male	Female
No response given	4.3	3.7	4.6
(A) Choice of the best solution is fundamentally a technical decision; the clinician should make a strong recommendation to patients and seek their endorsement	0	0	0
(B) Choice of the best solution is partly a technical decision and partly based on the clinician's preferences given what he/she knows about the patient	2.8	7.4	0
(C) Choice of the best solution results from negotiation between patients and clinicians after they have shared technical information as well as their values and preferences about the options	57.7	59.3	56.8
(D) Choice of the best solution is partly a technical decision and partly based on the patient's informed preferences, regardless of the clinicians preferences	28.2	25.9	29.5
(E) Choice of the best solution is completely based on patient preferences; the clinician should only make sure the patient has adequate information about each option	7	3.7	9.1

Table 3: Participants' responses to Question 9: "Which of the following would best describe your response to an edentulous patient who in response to your advice about treatment options asks, "What would you do if you were me?"

Response Chosen by Participant	Percentage of Participants		
	Overall	Male	Female
No response given	4.2	3.7	4.5
(A) Inform the patient that my clinical concerns and preferences are likely different from theirs and decline to offer an answer.	23.9	22.2	25.0
(B) Share my own clinical concerns and preferences to clarify differences with the patient's circumstances, and offer an answer as if I was choosing for myself.	38.0	40.7	36.4
(C) Answer the question as if I was the patient and use my own values/ preferences to choose among the different treatment options.	16.9	11.1	20.5
(D) Answer the question as if I was the patient and use my interpretation of the patient's values/ preferences to choose among the different treatment options.	12.7	22.3	6.8
(E) Answer the question as if I was the patient and use my interpretation of the average patient's values/ preferences to choose among the different treatment options.	4.3	0	6.8

Table 1: shows the median (IQR) responses to Questions 3 to 7 in males (column 2) and females (column 3) separately. There was no statistical evidence for gender

differences for Questions 2 or 5 to 7 (see column 4 for p-values). There was however, weak evidence that males perceive less importance of the edentulous patient's values in decision making compared to their female counterparts (Figure 6). Tables 2 and 3 show the responses in males (columns 2) and females (columns 3) to Questions 8 and 9, with 59% (M)/57% (F) and 41% (M)/36% (F) giving the most popular response to Questions 8 and 9, respectively.

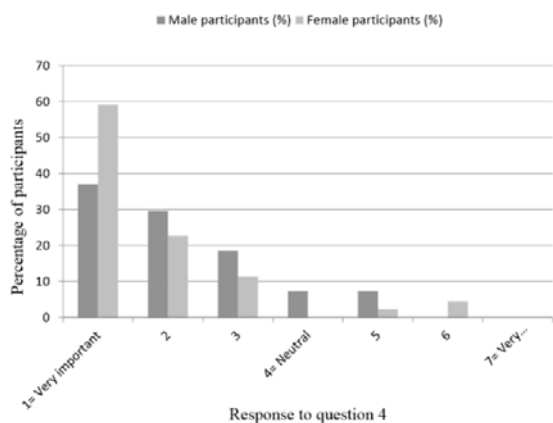


Figure 6: Male and female participants' response to Question 4: "How important do you perceive the edentulous patient's values (beliefs, priorities, preferences) to be in making treatment decisions?".

### Discussion

The aim of the current study was to describe interns' attitudes towards prosthodontic decision making for edentulous patients and identify any gender differences. The dental training curriculum states the ability to "Demonstrate effective and ethical decision making" as one of the major competencies required as part of the professionalism domain [14], and we are not aware that decision making practices amongst interns has been explored in the dental literature. The decision to survey all the interns rather than utilising a representative sample, reduced selection bias and increased the validity of the study, and using a questionnaire that has been thoroughly piloted and tested has been associated with increased

response rates [15]. The 91% overall response rate obtained in the study, is higher than that achieved for the majority studies involving dentists [16]. In this study, the questionnaire was based on the literature review that identified a previously developed and published instrument [13]. Closed questions were used and it is acknowledged that with such designs the richness of responses can be lower [17]. Such a design was necessary however, in order to generate quantitative data that would address the aims of the study. The Likert scale [18] is a summated rating scale and is commonly used to assess attitudes [19]. The Likert scale does not measure the attitude per se [20], but in this study allowed the comparison of survey items, for example, the participants' perceptions of the relative importance of dentist's, patient's and relatives' values in decision making. Questionnaire research can never be completely objective [21]. The questionnaire was intended to give an insight into the psychological perspective and attitudes of the interns towards the decision-making process with edentulous patients, not assessing the actual clinical practises of dentists. The respondents' anonymity was protected, and this was made clear to potential participants. This helps reduce method bias and increases validity especially at the judgement and response editing or reporting stages [22]. The respondents were also reassured in the participant information sheet that the questionnaire was "not a test and there are no right or wrong answers". This was designed to strengthen the study's validity and reduce response bias by reducing participants' evaluation apprehension (anxiety about being scrutinised) and make them less likely to edit their responses to show behaviour that would be expected of them [22]. The median age of 24 years is unsurprising given the most common age of entrance into the five year BDS programme is at 18 years. The significance of a

dentist's age in prosthodontic decision making has not been explored in the dental literature. Edentulism affects a huge population, 47% of those aged 85 years and over [24]. This age gap could affect the ability of interns to empathise with edentulous patients and might also mean that it is unlikely they would share similar values with respect to choosing the most appropriate treatment option. The gender distribution of the interns is typical of the gender distribution among dental undergraduates [23] with a slightly higher proportion of females [25]. The proportion of females was significantly greater ( $p < 0.001$ ) than the 16% observed among the group of North American prosthodontists previously studied [16]. The results demonstrate that the dentists rated the edentulous patient's values as more important than either their own values or those of the patient's family or friends, and that their own values and those of the edentulous patient's family or friends had only neutral or slight importance in helping edentulous patients make treatment decisions. This suggests that the principle of shared decision making or even a consumerist model is supported. The order of the two most popular choices by patients of their preferred role in decision making [26] matches exactly the two most common choices by interns on what constitutes the best way of arriving at the optimal treatment option. This is encouraging since shared decision making, with patients taking a collaborative decisional role, has been shown to be the preferred model of decision making by patients in both a primary care and secondary care dental setting [26]. The concept is also in line with the medico-legal requirements of obtaining informed, valid consent to treatment and respecting patient's autonomy. Dentists have the responsibility to ensure that patients have had the best opportunity to be involved in decision making about the care of their bodies [27]. Regarding how the interns present material to patients, in addition to what is actually

said, the eyes, face, posture and gestures form a package of non-verbal communication that can affect the perceptions of others [28]. These influential changes in voice and behaviour may be conscious or subconscious. The responses to Question 6 are potentially indicative of interns supporting the concept of shared decision making and respecting patient autonomy. As most dentists considered their patients to be satisfied with the decision-making process, a high level of confidence in discussing treatment options is suggested. Undergraduate students' confidence in dentist-patient interactions have been shown to be related to how well students felt they were taught and how often they encountered the situation [29]. One assumption that has been made is that participants have indeed had adequate training in these skills, and that they have treated a sufficient number of edentulous patients throughout their undergraduate career in order to form these opinions. A previous study [30] found new UK graduates entering vocational training with little confidence in denture techniques and unable, sometimes unwilling, to undertake these procedures. A later UK survey [31] suggested that dental foundation trainees might be under trained to make clinical decisions that are meaningful. A minority of dentists indicated that their patients were of neutral opinion or dissatisfied with the decision-making process. This could be due to a lack of confidence in complete denture techniques [32], or it could relate to the lack of routine funding for implant retained prostheses in primary and secondary care [33]. For those unable to afford implants in the independent sector, some edentulous patients may, unfortunately, have no choice at all. Comparing the responses to Question 8 in the current study to those of a group of North American prosthodontists [16], the results are fairly similar, although the percentage of clinicians advocating the consumerist



model was nearly three times higher in the American study [16] than in the current study.

The responses to Question 9 (Table 3) on being asked “What would you do if you were me?” produced a variety of responses. The majority of interns would offer an answer, rather than expressing that their clinical concerns and preferences are likely to be different from the patient’s and declining to offer an answer. It could be viewed that declining to offer an answer is perhaps the most professional and ethical in that what the patient is really seeking by asking the question is the clinicians’ recommendation on the best plan. Perhaps this option was unpopular due to the pressure felt by clinicians to help patients. The majority (54.9%) of interns indicated they would use their own values to answer the question, rather than their interpretation of the patient’s values (12.7%), or even using what they considered to be the average patient’s values (4.3%). It is acknowledged that 38% of the dentists would share their own clinical concerns and preferences to clarify differences with the patient’s circumstances, before offering an answer as if they were choosing for themselves. Few interns indicated they would choose to answer the question as if they were the patient using their interpretation of the patients’ values. One must consider how accurately and comprehensively dentists can appraise patients’ values and preferences in a dental consultation appointment. Research from medicine has shown that surrogate decision makers, whether doctors, patient chosen relatives or next of kin show poor accuracy in predicting patient’s treatment preferences [36]. Question 9, which seeks a treatment recommendation, is subject to the self-other discrepancies seen in medical decision making. It has been shown [37] that doctors make more conservative treatment choices for their patients than for themselves, even if they accurately predicted that their patients would want a riskier treatment than the one, they

selected. Reasons behind this include the fear of legal consequences [38]. If these findings are applicable to dentistry, they would have relevance to the patients listening to recommendations from dentists, particularly since the patients were not aware of these discrepancies and thought that the decisions their doctors made for themselves would be similar to the decisions they made for their patients [37]. Question 9 was a realistic question that interns most likely could have been asked in the past by patients, and so their response may well represent actual personal experience. The dentists studied appeared to endorse the concept of shared decision making in the majority of Questions 3 to 8. It is of interest therefore, why in response to a more real-world scenario in Question 9, interns were more likely to give a recommendation for treatment based on their own values than those of the patient. This same contradiction and discrepancy were seen in the American study [16]. A similar discrepancy has been noted between what factors dentists say are important in decision making in implant dentistry and those they actually use to make the decision to recommend implants to a patient [39]. The reasons behind the discrepancy found in this study are unclear. Further work, possibly of a qualitative or mixed methods nature in a real or simulated clinical environment would be required to obtain a more accurate, objective picture of interns’ decision-making styles.

The results showed that there was no strong evidence to suggest that there are gender differences in the decision-making practices of the group of interns studied. There was weak statistical evidence that males perceived edentulous patients’ values to be of less importance than females ( $p = 0.07$ ). Males did indicate that the patient’s values were important, although perhaps not quite to the same extent as the females. This could be due to female dentists in general being more empathetic than their male

counterparts. A critical review [8] of the physician–patient relationship found female physicians facilitate partnership and patient participation in the medical exchange more effectively than do male physicians. It is known that patients preferred decision-making style or role is not static [26]. It varies within individuals and between individuals greatly, depending on factors such as the age and gender of the patient, gravity of the decision to be made, the clinical practice setting, the knowledge of the subject being discussed, trust in the dentist, time constraints, dissatisfaction with previous dental treatment, dental pain and the threat of wearing dentures [26]. Perhaps the ideal decision-making style for dentists is an adaptive one, which varies according to the wishes of activity or passivity of the patient in decision making, whilst all the time respecting patient autonomy. The study did not aim to be representative of the entire intern population, and so the results of this study cannot be readily generalised to all interns. There may be factors that affect interns' attitudes towards prosthodontic decision making which also affect their choice of region of the country.

### Conclusion

This study has provided some baseline findings in this little researched area of implant prosthodontics. The general consensus supporting shared decision making as an approach to decision making is encouraging, and is supportive of the dental schools' ability to foster ethical and professional values among dentists. No gender differences being reported in the attitudes of dentists towards decision making is also encouraging, and can be used to inform undergraduate and dental foundation programme curriculum development in patient communication and the behavioural sciences.

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