

1 The Role of Board Certification as a Cue to Competence of Eye 2 Care Providers: An Empirical Analysis

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6

7 **Abstract**

8 Authors have long known of the need for ?cues? to assess the competence and training of
9 providers of credence services. In the case of health care providers such as eye care
10 professionals, one such cue is whether the eye care professional is ?board certified.? This study
11 of 500 consumers who had had an eye exam either from an optometrist or an ophthalmologist
12 examines four questions: what factors are important to a consumer seeking an eye-care
13 provider, what is communicated by an eye-care provider?s claim of being board certified,
14 whether there are differences in perception between board certification as applied to an
15 optometrist and an ophthalmologist, and whether there are differences in the perceptions of
16 optometrists who are board certified compared to those who are not board certified. The
17 results show that board certification is an important cue for consumers in assessing the
18 competence and expertise of optometrists and that board certification can be used to
19 distinguish between an optometrist and an ophthalmologist. The results also show that
20 optometrists who are board certified as seen as better trained and more competent than
21 optometrists who are not board certified.

22

23 **Index terms**— credence services; health care; eye-care; board certification; optometrists.

24 **1 Introduction**

25 In 1973 Darby and Karni identified a distinction between experience, search, and credence goods and services.
26 According to Darby and Karni (1973), credence goods are goods and services "sold within relationships
27 characterized by high levels of information asymmetry between buyers and sellers, with buyers Author:
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29 to trust the sellers as to claims made, i.e., in situations where the seller determines the customers' requirements."
30 Moreover, in the case of some services, such as health care, not only do consumers have almost no ability to
31 assess what service is needed or the quality of the service to be performed, they may have difficulty evaluating the
32 quality of the service even after it is received. In addition, in most cases involving health care, consumers don't
33 have the ability to determine how the quality of the service received compares to other health care providers of
34 the same service. This is because, as noted by ??arasuraman, Zeithaml and Berry (1985), service experiences
35 are systematically different because services are heterogeneous and, as a result, less predictable.

36 The question then becomes what kind of information is important to consumers as they seek to reduce the
37 risks inherent in the purchase of these credence services? In other words, what sources of information can a
38 consumer use as "cues" as to the competence and expertise of a health-care provider? One such "cue" is whether
39 the health-care provider is "board certified" and, then the questions are whether the certification is important to
40 consumers in their selection of a health-care professional and whether board certification is effective as a cue to
41 the providers' expertise and competence.

42 This study focuses on one type of health-related service, eye care, and consumers' purchase of eye-care services
43 from optometrists, who are state-licensed eyecare professionals but different from ophthalmologists, who are

3 PRIOR RESEARCH

44 medical doctors specializing in eye care. Eye care was selected because eye care is a service with both a credence
45 and an experience attribute, i.e., the consumers know if they see better after an eye exam but must rely on
46 the expertise of the eye care provider to determine the need for treatment, i.e., a new or changed prescription,
47 and because the consumer has no way of knowing whether the quality of the service received would be different
48 if a different eye care provider had been selected. Specifically, the research questions are: 1. What factors are
49 important in the selection of an eye-care provider? 2. How important was board certified in a consumer's decision
50 to see their particular eye care provider?

51 3. What message is being communicated by an eye care provider who is board certified? 4. Is there a difference
52 in perception of optometrists who are board certified eye-care providers and ophthalmologists, all of whom are
53 board certified medical doctors specializing in eye care? 5. Are there differences in perception of an optometrist
54 who is board certified and an optometrist who is not board certified?

55 The data for this analysis is a nationwide on-line survey of 500 consumers age 21 or older who had seen an
56 eye-care professional (optometrist or ophthalmologist) in the prior three years. Board certification of optometrists
57 or ophthalmologists was selected as a subject matter since ophthalmologists, who are medical doctors specializing
58 in eye care, have board certification as a requirement to practice while board certification of optometrists is a
59 relatively new phenomenon and is voluntary.

60 Thus, consumers' perceptions of the certification of ophthalmologists serve as a control to account for pre-
61 existing beliefs regarding board certification in general and as it relates to board certification of optometrists.

62 2 II.

63 3 Prior Research

64 The seminal article on credence goods and services is Darby and Karni (1973) who introduced the concept of
65 a credence good to Nelson's (1970) earlier classification of search and experience goods. Other authors have
66 expanded on the Darby and Karni continuum of credence goods to include services based, for example, on the
67 level of risk associated with services (Zeithamal & Bitner 2000; and Mitchell 1994); the level of information search
68 with credence services (Mortimer and Pressey, 2013); and whether the services were provided in a professional-
69 consumer or professional-business relationship (Ostrom & Iacobucci 1995).

70 Additionally, authors have noted that professional services have characteristics similar to credence goods in
71 that they are often customized for the individual (Lapierre, 1997), and frequently require interaction between
72 the service provider and the consumer to create value (Hirvonen & Helander 2001).

73 Importantly, as noted by Mitra and Capella (1999), there is reason to believe that consumers engage in
74 different decision-making processes while evaluating credence services because the intangibility of services makes
75 it difficult to assess the quality of the service. Thus, services in general and medical-related services in particular
76 are perceived as associated with greater uncertainty and higher risks and, as a result, must be taken on faith.
77 For example, as noted by Sun, et al (2012), a higher level of uncertainty leads consumers of credence services
78 such as health-care to rely on non-alignable attributes, i.e., those that are unique to the particular provider of
79 the service, as opposed to alignable attributes, which are discernable across service providers. Similarly, Hsieh
80 and Hsiang (2004) found that, among consumers who had had a hospital visit, that "interaction quality," defined
81 as the trust between consumers and the health-care providers, and "functional quality," defined as the attitudes,
82 behaviors, and expertise of the health-care provider, were important criteria in assessing the value of credence
83 services.

84 Other authors have examined the role of thirdparty certification for credence services, including certification
85 of health care professionals. For example, Baldwin et al (2011) found that credentialing, including certification
86 programs, are developed by third-party health-related organizations to "?protect the public by establishing and
87 ensuring a minimum acceptable standard of quality and performance for professionals working in population
88 health ?"Also, Babakus et al (1991) found that "?physicians have found that consumers value certification as an
89 indicator of achievement, competence, and quality."

90 Similarly, Adams et al ??2002) suggests that, in the case of midwife and nurse midwives, being "certified"
91 is an indication of competence that will forestall consumers' "drift to lowprice, low-quality alternatives" when
92 selecting a healthcare (midwife) provider. On the other hand, Grosch (2006) found "no credible link between
93 specialty board certification and outcomes or quality of clinical care among medical doctors." Applying these
94 findings to eye-care professionals, while consumers may, in varying degree, have the skill, knowledge, experience,
95 and technical expertise to form expectations and performance assessments about some services they receive, no
96 such skill or knowledge is likely to exist in the case of eye care. Thus, while consumers may engage in more
97 involvement and more information search with credence services, there is limited opportunity for such search in
98 the case of eye-care providers. This is called "asymmetry of information" (Zeithaml and Bitner 2000) because
99 sources don't exist to enable a consumer to determine if optometrist A is more competent, or better trained
100 than optometrist B. Hence, the role of a cue such as board certification as a measure of credence factors such as
101 expertise, training, and quality of care is likely to be an important factor in a consumers' decision as to who to
102 choose as his/her eye-care professional.

103 **4 III.**

104 **5 Methodology**

105 The data were collected from a nationwide sample of 500 consumers drawn from an internet panel of individuals
106 who have agreed to participate in internet surveys on a periodic basis. The universe for this study is adults age
107 21 or older who have seen an eye care provider (optometrist or ophthalmologist) within the prior three years.
108 Respondents who agreed to participate in the on-line survey were first asked a series of qualifying questions
109 related to whether they wore contact lenses or glasses prescribed by an eye care provider and whether they had
110 received their eye care from either an optometrist or an ophthalmologist. Respondents were then asked what
111 factors were important in their selection of an eye-care provider, whether they believe the eye care provider they
112 had seen, i.e., an optometrist or ophthalmologist, was "board certified," and the importance of their eye care
113 provider being board certified. They were also asked what it meant to be "board certified" (in general) and
114 what a claim of being board certified says about that eye care provider and whether there are any differences
115 in training, competence, or expertise between an optometrist who is board certified and one who is not board
116 certified.

117 IV.

118 **6 Findings a) Demographic Profile**

119 As noted in Table 1, 71% of respondents were female, almost half (47%) had either a 4-Year college or graduate
120 degree, and 58% had seen an optometrist in the past three years while a third (42%) had seen an ophthalmologist.
121 2, the provider's professional qualifications was seen as the most important, rated as "very important" or
122 "extremely important" by 75.8% of respondents, followed by his/her reputation (71.9%), his/her personal qualities
123 (69.9%), and board certification (68.1%). What is particularly noteworthy is that 68.1% of respondents viewed
124 board certification as "very important" or "extremely important," even though there was no mention of board
125 certification in any prior question. The second research question examines the specific importance of board
126 certification in a consumer's decision to see a particular eye-care provider. Respondents were first asked whether
127 the eye care provider they saw was board certified. As noted in Table 3, significantly more respondents (?=.05)
128 who had seen an ophthalmologist said they believed he/she was board certified, compared to 73% of those
129 respondents who had seen an optometrist. This latter result is noteworthy since it is estimated that less than five
130 percent of optometrists are board certified by either of the optometric associations (American Optometric Society,
131 Inc. vs American Board of Optometry, Inc. 2011). Computation of traditional estimates of statistical precision
132 technically require a probability (random) sample. However, statistical estimates using non-probability samples
133 can be used to provide some estimate of likely sampling error. Under appropriate statistical assumptions, a total
134 sample size of 504 will produce confidence intervals for statistical estimates that are no greater than +/-5.9%
135 95% of the time.

136 All respondents were next asked how important, if at all, it is that their eye care provider be board certified.
137 As noted in Table 4, 62.5% of respondents who had seen an optometrist said it was "very important" or
138 "extremely important" that their eye care provider be board certified while 70.8% of respondents who had seen
139 an ophthalmologist indicated it was "very important" or "extremely important" that they be board certified.
140 Respondents were then asked their reason for a belief that it was important or unimportant that their eye care
141 provider be board certified, with their verbatim responses recorded. Among the reasons as to why being board
142 certified was important across all respondents were such statements as "I only have one pair of eyes, I want them
143 taken care of by a professional," "it certifies that he has the qualifications I needed," "I feel more assured of
144 his/her competence if he/she is board certified," "it gives comfort that he has the required skills to perform job,"
145 and "it means he or she has passed a series of qualification tests from peers representing the industry." Among,
146 those who said board certification was unimportant, the primary reason was that being "licensed" is seen as the
147 same as being "board certified."

148 **7 d) Perception of Board Certification**

149 The third research question asks what message is being communicated by an eye-care provider who is board
150 certified. In order to address this question, respondents were shown a series of statements regarding board
151 certification of eye care providers and asked whether they believed each statement was "Definitely/Probably
152 Correct" or not. As noted in Table 5, consistent with prior research regarding the perception of providers of
153 credence services like health care providers, two-thirds of the respondents (64% -68%) believe that eye-care
154 providers who are board certified: a) are more competent than eye care providers who are not board certified,
155 b) have completed residency training, and c) have more formal training than an eye care provider who is not
156 board certified. Importantly, however, less than half of all eye care consumers (45.7%) believe that being board
157 certified is necessary to provide eye care.

158 8 e) Differences between Perceptions of Optometrists and Oph- 159 thalmologists Regarding Board Certification.

160 The fourth research question sought to determine if consumers' perceptions of eye-care providers who had seen
161 an optometrist are different from perceptions of consumers who had seen an ophthalmologist. In order to answer
162 this question respondents were asked whether there was a difference in the nature of the certification requirements
163 for an optometrist to become board certified and the requirements for a medical doctor to become board certified
164 in ophthalmology. As noted in Table 6, in all credence-factor categories raised, significantly more respondents
165 see ophthalmologists as having higher requirements for board certification than optometrists, including 80% of
166 respondents believing that a medical doctor must "pass a qualifying exam/test" to become board certified in
167 ophthalmology, compared to 66% who believe an optometrist must pass a qualify exam to be board certified.
168 All respondents, regardless of who their eye care provider was, were asked about the fifth research question, i.e.,
169 their perceptions of optometrists who are board certified and those who are not board certified. Specifically,
170 they were shown a series of statements and asked whether the statement was "definitely or probably true" or
171 "definitely or probably not true." As noted in Table 7, some of the noteworthy results are that significantly more
172 respondents believe an optometrist who is board certified: a) is more competent than one who is not, b) has more
173 training than one who is not, and c) is more of a specialist than one who is not. Also, over a third of respondents
174 don't believe that an optometrist who is board certified just paid a fee to be certified. On the other hand, being
175 board certified is not seen as necessary to treat particular types of diseases or to write prescriptions. Moreover,
176 when the data in Table 7 were analyzed by sub-group (i.e., optometrist v. ophthalmologist) the results show
177 similar perceptions of board certification for optometrists and ophthalmologists, suggesting that at least some
178 of the basis for perceptions of board certification for optometrists comes from respondents' pre-existing beliefs
179 regarding board certification of ophthalmologists. V.

180 9 Conclusions

181 Four conclusions flow from this study of consumers who have seen either an optometrist or an ophthalmologist
182 for eye care. First, credence factors such as personal qualifications and reputation are the most important
183 factors consumers use when selecting an eye-care provider, with "board certification" being the fourth most
184 important factor in their decision. Second, the importance of board certification is not significantly different
185 when the consumers' eye-care provider was an optometrist and when he/she was an ophthalmologist. Third,
186 board certification provides a cue as to competence and training of a credence service provider such as eye-care
187 providers and, theoretically, can be used to distinguish between the competence and training of optometrists
188 based on whether they are board certified or not. Also, board certification can be used, at least theoretically,
189 to distinguish between optometrists and ophthalmologists, particularly since ophthalmologists are seen as more
190 competent and more of an eye care specialist, based on the perception that the requirements for board certification
191 for an ophthalmologist are higher than for an optometrist. Fourth, and most importantly, while board certification
192 serves as a cue as to competence, it is not an effective cue that consumers can use in deciding what type of eye
193 care provider to use, given that 73% of respondents who saw an optometrist (as opposed to an ophthalmologist)
194 believe their eye care provider was board certified when estimates are that less than 5% of optometrists are board
195 certified. Apparently, simply because the optometrist was licensed by the State as an eye care provider leads
196 consumers to believe he/she is board certified.

197 10 VI.

198 11 Policy Implications

199 First, public entities at the Federal and State level, working with professionals and academics in the field of
200 optometry, need to establish uniform standards for board certification in order to provide an environment of
201 trust such that the consuming public can be assured The Role of Board Certification as a Cue to Competence
202 of Eye Care Providers: An Empirical Analysis organizations must establish and maintain rigorous standards
203 for certification that include additional training and coursework, and periodic assessment of optometrists'
204 performance to assure that, consistent with consumer perceptions, "board certification" of an optometrist can
205 be used by a consumer as a "cue" to an eye-care provider with the highest level of expertise, competence, and
206 training. Finally, the results of this study clearly show the need for optometrists to distinguish themselves from
207 ophthalmologists and articulate the benefits of board certification.

208 12 Bibliography

209 ¹



Figure 1:

1

Gender	Male	135 (29%)
	Female	333 (71%)
N		468
Age	Under 21	2
	21-30	50 (1%)
	31-40	76 (16%)
	41-50	105 (22%)
	51-60	122 (26%)
	Over 60	113 (24%)
N		468
Education	High School or less	74 (16%)
	Some College	111 (24%)
	2-Yr College Grad	62 (13%)
	4-Yr College Grad	155 (33%)
	Grad School/Degree	66 (14%)
N		468
Eye Care	Optometrist	306 (58%)
Professional		
Seen		
	Ophthalmologist	224 (42%)
	Not Sure an Optometrist or Ophthalmologist	—
N		530*

[Note: *Includes those who only completed part of survey b) Importance of Board Certification]

Figure 2: Table 1 :

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	Factor	Very/Extremely Important
His/her experience/years in practice		389 (58.5%)*
Professional school attended		235 (35.3%)
His/her information on success/failure	past performance	431 (64.8%)
Information of complaints/lawsuits		340 (51.1%)
Personal qualities/communication skills		465 (69.9%)

Figure 3: Table 2 :

3

	Optometrist	Ophthalmologist
Yes	213 (73%)**	183 (86%)
No	0	1
Don't know/Not sure	78 (27%)	29 (14%)
N*	291	213

[Note: *Limited to those who said they had seen specific provider; Margin of error = +/-5.9% 1 1]

Figure 4: Table 3 :

4

Optometrist Ophthalmologist

Figure 5: Table 4 :

5

	Definitely Correct/ Correct/ Proba- bly not cor- rect	Might/ Might Not	Definitely Correct/ Probably	Don't know/Not sure
An eye care provider must be board certified to legally provide eye care* Board certification is a voluntary process Board certified eye care providers are likely to be more competent than eye care providers who are not board certified Board certification requires completion of residency training after obtaining a license	83 (17.1%)	56 (11.6%)	222 (45.7%) 111 (22.9%)	484** 188 (38.8%) 135 (27.9%) 331 (68.4%) 62 (12.8%)
Board certified eye care providers have more formal who are not board certified training than eye care providers	22 (4.5%)	68 (14.0%)	314 (64.9%)	80 (16.6%)

[Note: **Limited to those who saw either optometrist or ophthalmologist and knew if he/she was board certified.]

Figure 6: Table 5 :

Ophthalmologist	Optometrist
Board Certification	Board Certification
Additional formal training in a field of eye medicine/optometry	94 (65%)
Additional course/clinical work in a field of eye medicine/optometry	93 (65%)
Additional experience in practice	66 (46%)
Periodic assessment of his/her work	67 (47%)
Being an expert in a particular field of eye medicine/optometry	68 (47%)
Being a specialist in a particular field of eye medicine/optometry	77 (53%)
Pass a qualifying exam/test	115 (80%)
Don't know/Not sure	10 (7%)
Other (specify)	0
N	144
	197*

*Different ? = .05 or greater; ** Includes those who said no difference

f) Perceived Differences Between Optometrists Who Are Board Certified and Optometrists Who Are Not Board Certified.

Figure 7: Table 6 :

	Definitely not true/	Might/ Might Not	Probably true/	Don't know/ Not sure	N
An optometrist who is board certified is more of a specialist than one who is not.*	51 (10.9%)	78 (16.7%)	229*(48.9%)	110 (23.5%)	468
An optometrist who is board certified is likely to be more competent than one who is not	25 (5.3%)	106 (34.2%)	228 (48.7%)	89 (19.0%)	468
An optometrist who is board certified is likely to have more training than one who is not	22 (4.7%)	69 (14.7%)	299 (63.9%)	78 (16.7%)	468
An optometrist who is board certified just paid a fee to become certified	178 (38.0%)	74 (15.8%)	86 (18.4%)	134 (27.8%)	468
An optometrist who is board certified is likely to be more expensive than one who is not	55 (11.8%)	126 (26.9%)	176 (37.6%)	111 (23.7%)	468

Figure 8: Table 7 :

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