Exploring the Association Between Caregivers' Oral Health Literacy & Children's Caries Status

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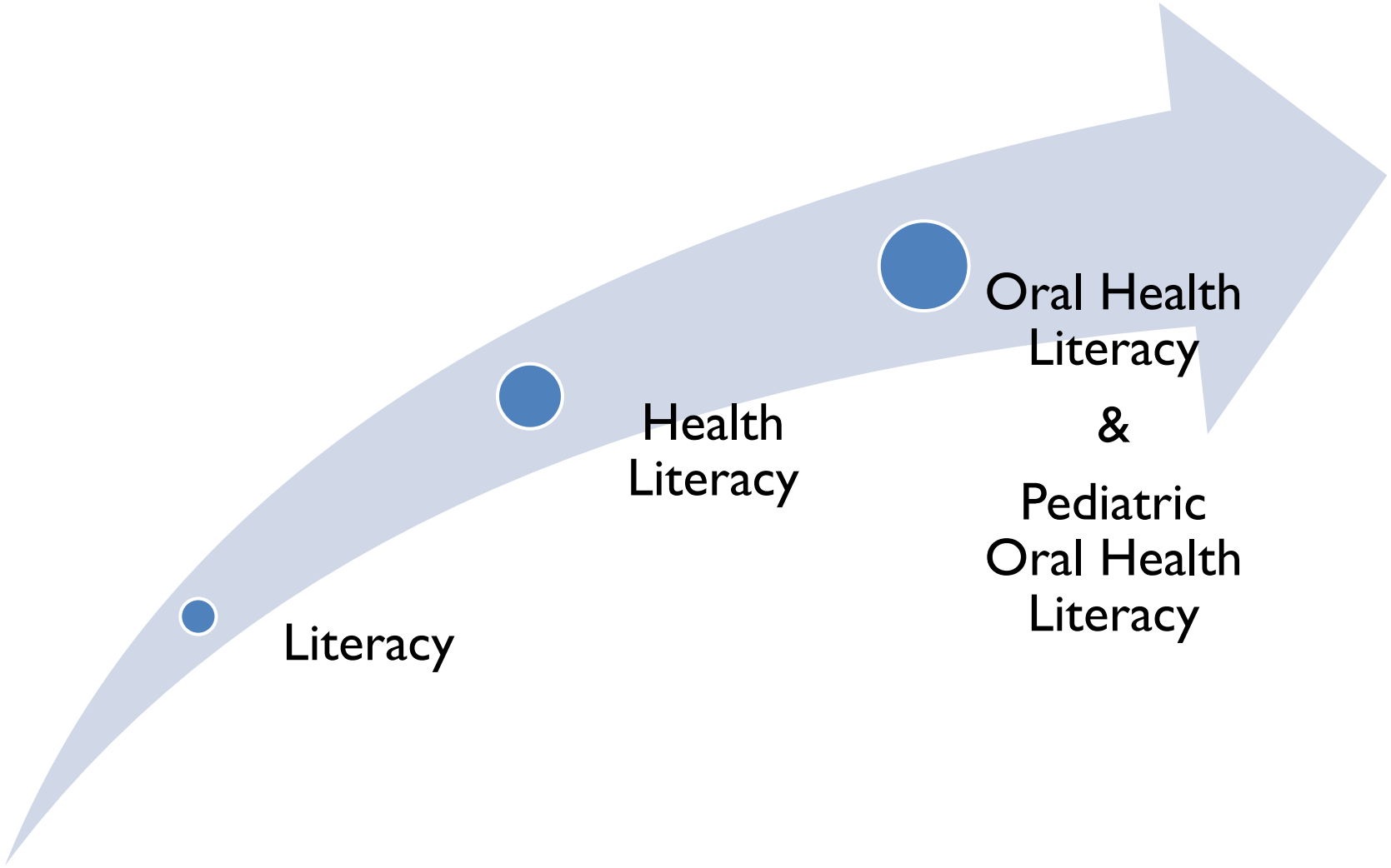
The Breadth of Literacy

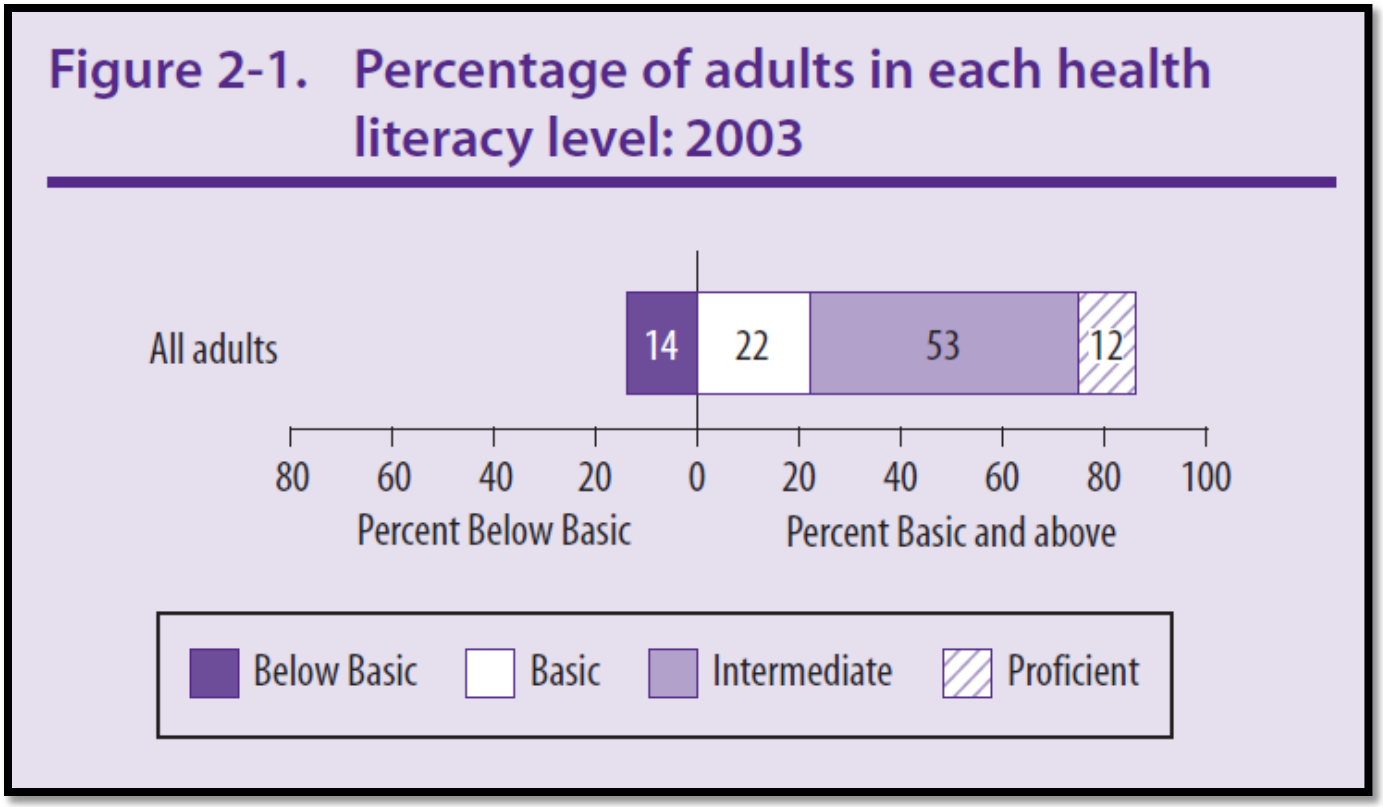


Literacy vs. Health Literacy

"The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions."

- IOM, "Health Literacy: a Prescription to End Confusion"

Health Literacy



National Assessment of Adult Literacy, 2003

Consequences of Low Health Literacy

- Improper adherence to prescriptions
- Lower utilization of preventive services
- Increased hospitalization and ER use
- Increased unhealthy behaviors
- Poorer overall health status and QOL

De Walt, 2004

Oral Health Literacy

"The degree to which individuals have the capacity to obtain, process, and understand basic **oral** health information and services needed to make appropriate health decisions."

- American Dental Association

ADA American Dental Association®

Oral Health Literacy Research to Date

- Instrument development
- Readability of material
- Word recognition
- Adult health outcomes
- Self-reported outcomes

Instruments of Focus

- Rapid Estimate of Adult Literacy in Dentistry (REALD-30)
  - Scores pronunciation (recognition) of 30 adult dental terms
  - Scores were associated with a caries severity scale, but were not associated with behavior or knowledge
  - Calls for more specific caries measurement

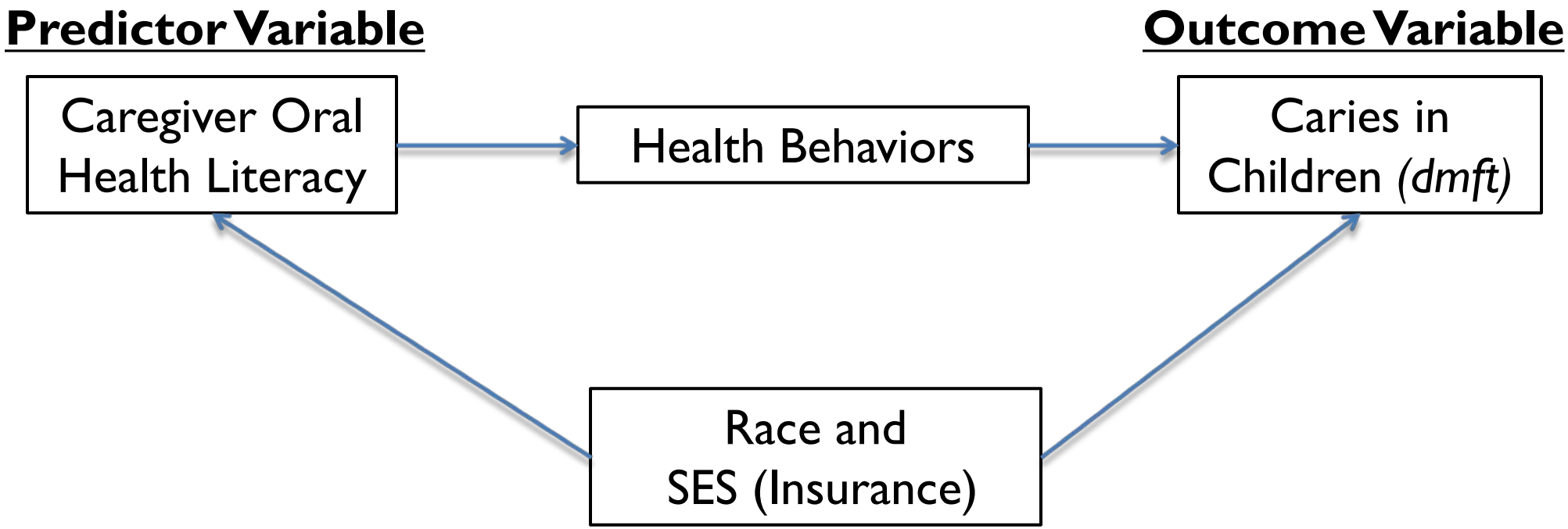
Miller, 2010 and Lee, 2007

Instruments of Focus

- Oral Health Literacy Inventory for Parents (OH-LIP)
  - 35 pediatric dental terms
    - OH-LIP I utilizes word recognition
    - OH-LIP II utilizes vocabulary knowledge
  - Self-reported oral health not associated with OH-LIP I, II, or III
  - Calls for comparison with a validated instrument and dental exam

Richman, 2011

Conceptual Model



Primary Aims

1. Determine if scores on the OH-LIP I, OH-LIP II and REALD-30 correlated.

2. Determine if oral health literacy scores are associated with *dmft*.

Secondary Aims

1. Explore demographic and dental characteristics associated with low oral health literacy scores.

2. Compare word recognition scores and vocabulary knowledge scores.

Design, Setting, and Sample

- Design: Cross-sectional study
- Setting: The Center for Pediatric Dentistry
- Sample:
  - Convenience sample
  - Primary caregivers and children aged 3-6 years

Methods

Recruitment: *Inclusion and Exclusion Criteria*

Enrollment and Consent

Demographic and Dental Utilization Survey

Methods

Audio-recorded interview:

READ-30, OH-LIP I, and OH-LIP II

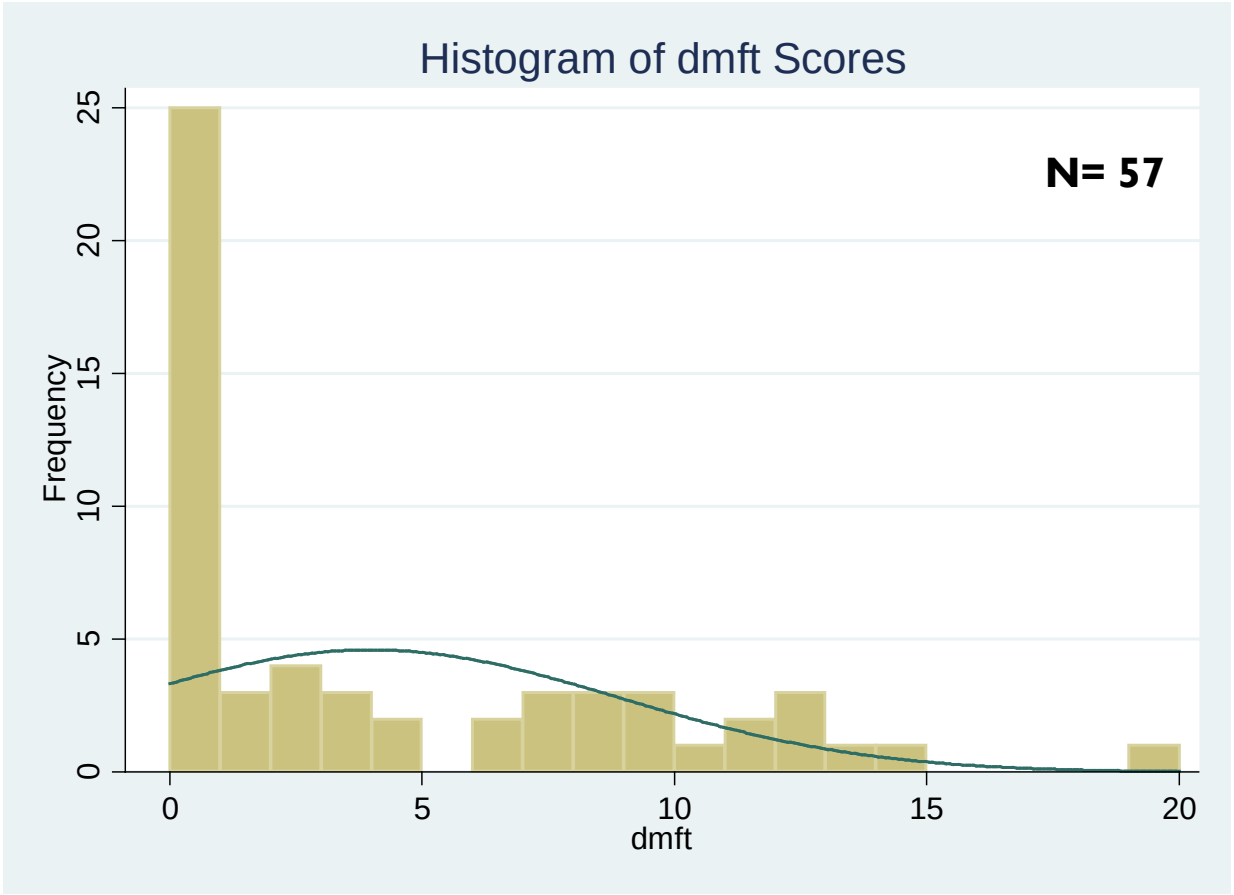
Child dental examination

Audio recording and dental chart reviews and scoring

Statistical Analysis

- Descriptive statistics
- Pearson correlations
- Parametric and non-parametric tests of association
- Unadjusted and adjusted Poisson regression

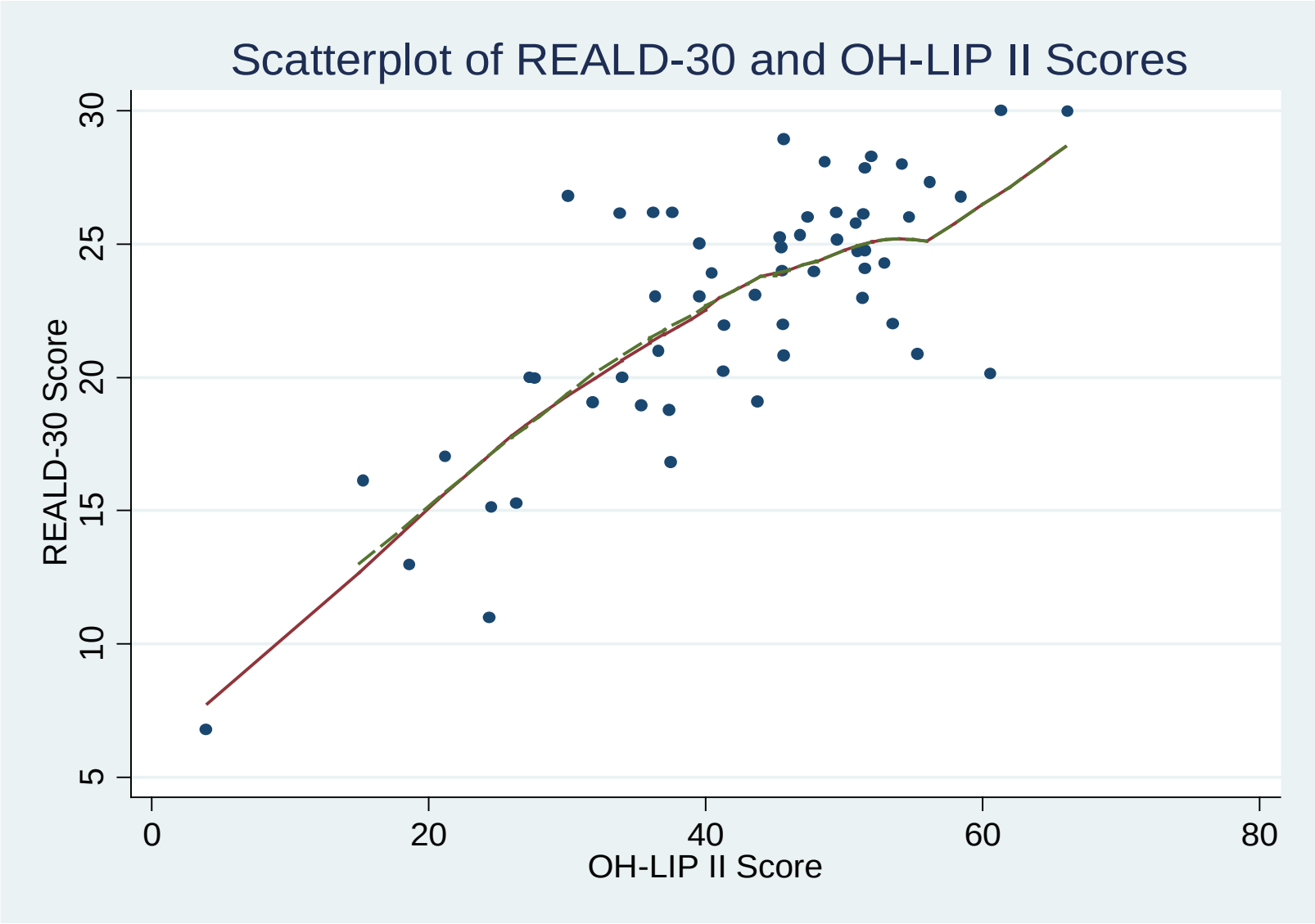
Results & Discussion



dmft Score	N (%)
0	25 (43.8%)
1 to 5	12 (21.1%)
6 to10	12 (21.1%)
11 to 20	8 (14.0%)

Primary Aim 1

Correlation between Oral Health Literacy Instruments		
	r-value	**p-value**
OH-LIP I and OH-LIP II	0.70	<0.001*
OH-LIP I and REALD-30	0.71	<0.001*
OH-LIP II and REALD-30	0.77	<0.001*
**Statistically significant Pearson correlation at the α= 0.05 level with Bonferroni adjustment*		


Scatterplot of REALD-30 and OH-LIP II Scores
REALD-30 Score
5
10
15
20
25
30
0
20
40
60
80
OH-LIP II Score

Primary Aim 2

Association between Child *dmft* and Caregiver Oral Health Literacy Scores*

	***dmft* (Crude)**		***dmft* (Adjusted**)**	
	RR (95% CI)	**p-value**	**RR (95% CI)**	**p-value**
REALD-30 Score	0.96 (0.93,1.01)	0.15	0.96 (0.91,1.01)	0.11
OH-LIP I Score	0.99 (0.93,1.05)	0.76	0.99 (0.93,1.05)	0.72
OH-LIP II Score	1.00 (0.98,1.02)	0.76	1.01 (0.98,1.03)	0.63

** Poisson regression with robust standard errors*

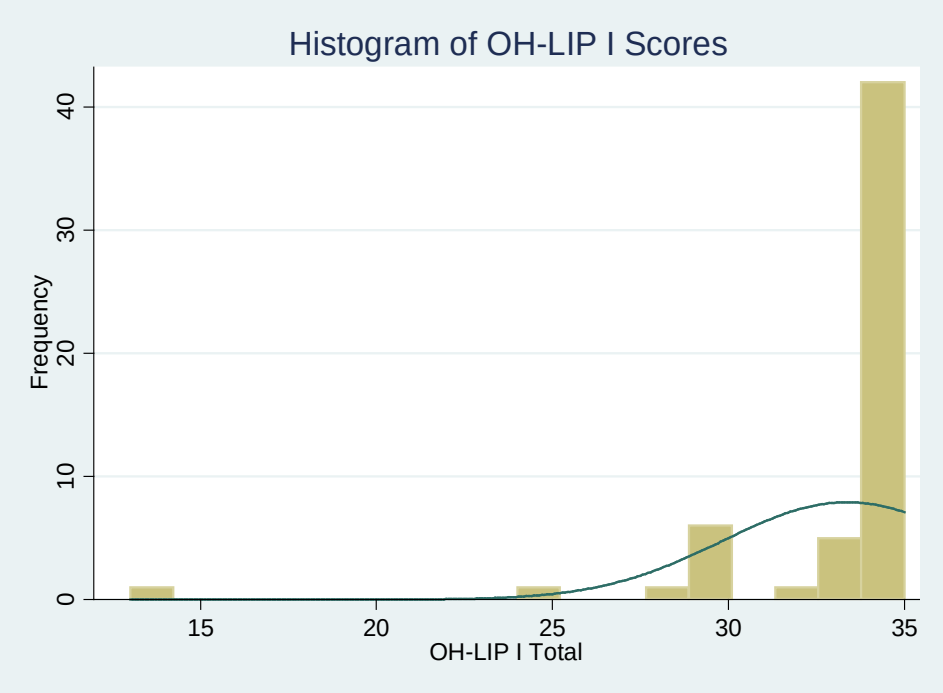
***Adjusted for insurance type (private vs. public) and race (White vs. non-white)*

Secondary Aim 1

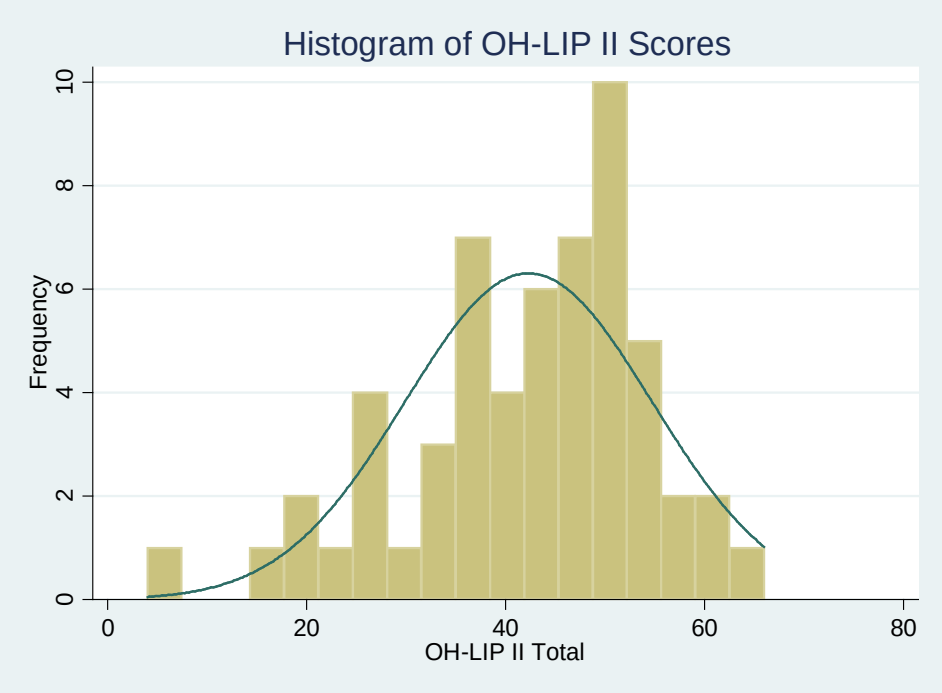
Caregiver Oral Health Literacy Scores' and Child *dmft* Scores' Association with Selected Characteristics			
	REALD-30	**OH-LIP I**	**OH-LIP II**
Caregiver's ethnicity†	*0.02**	*0.16*	*0.13*
Primary language(s) spoken in the home**	*0.01**	*0.01**	*0.006**
Caregiver's education†	*0.06*	*0.43*	*0.001**
Child's primary insurance type**	*0.008**	*0.16*	*0.005**
Household income†	*0.004**	*0.67*	*0.006**
Caregiver's assessment of child's oral health†	*0.02**	*0.99*	*0.03**
Caregiver's assessment of own oral health†	*0.03**	*0.23*	*0.002**

** Statistically significant at the $\alpha = 0.05$ level*
*** Two-sample t-test with unequal variance*
†Kruskal-Wallis non-parametric analysis of variance

Secondary Aim 2

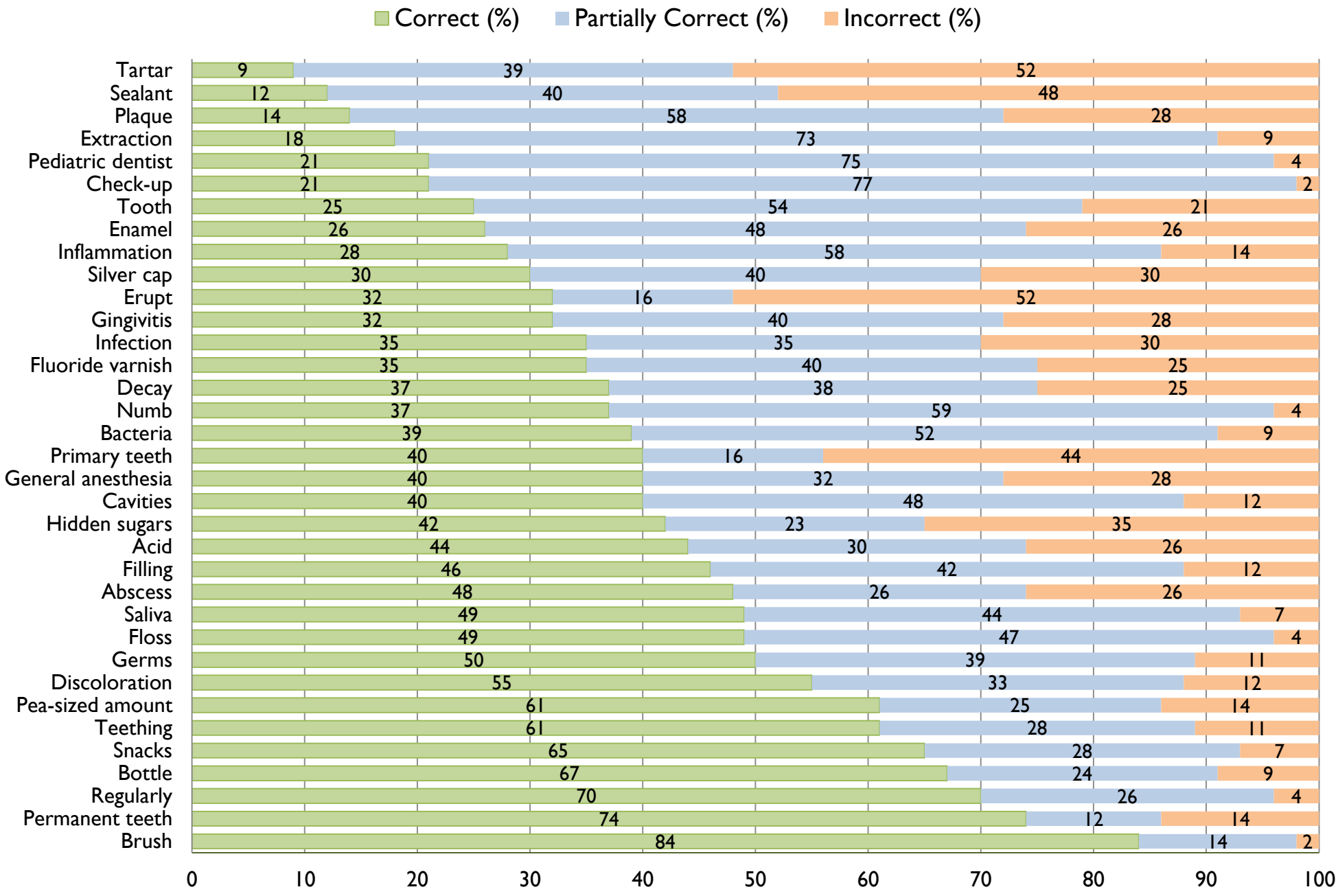


Scores can range from 0-35



Scores can range from 0-70

Caregivers' Vocabulary Knowledge on the OH-LIP II



Key Findings

- All oral health literacy instruments were strongly correlated.
  - Strongest correlation is between the REALD-30 and OH-LIP II.
- No instrument was significantly associated with *dmft* scores.
- Many parents had partial or incorrect understanding of pediatric vocabulary, despite their ability to pronounce terms correctly.

Key Findings

- The READ-30 and OH-LIP II scores differ by demographic and dental characteristics known to be associated with low oral health literacy:
  - Non-English speaking
  - Lower educational attainment
  - Lower income
  - Public insurance
  - Perceived poorer oral health status

Conclusions

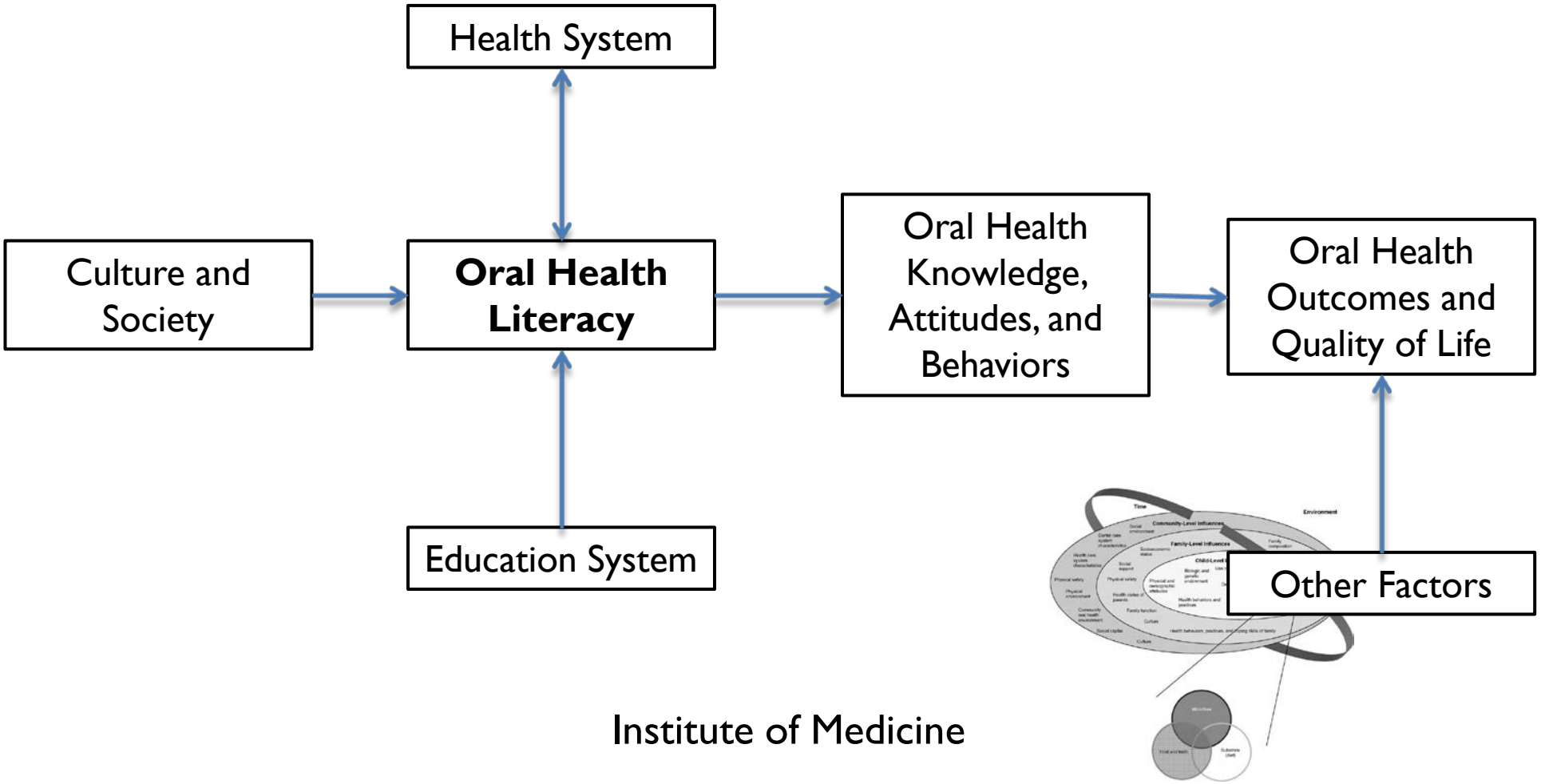
- REALD-30 and the OH-LIP II may have more internal validity.
- OH-LIP II allows for broader exploration of oral health literacy and may have wider external validity.
- OH-LIP I results are too homogenous to draw conclusions about caregiver oral health literacy.

Conclusions

- Caregiver oral health literacy is multifactorial:
  - Oral health literacy is only one contributor to oral health
  - *dmft* is not the only outcome of interest

Design and instrument limitations

Theoretical Framework



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Clinical Relevance

1. Don't make assumptions about oral health literacy.
2. Word recognition may overestimate oral health literacy; think about informed consent.
3. If literacy is low, research data has less meaning.
4. Caregivers' oral health literacy affect behavior.
5. Appropriately tailor oral health messages, use visuals, ask questions, keep messages simple and avoid jargon.

Future Directions

- Experimental/longitudinal research designs to infer temporality
- Explore relationship between intermediate variables
- Factor analysis to focus on meaningful terms
- Qualitative analysis of vocabulary knowledge
- Explore sources of oral health information in a digital era

Questions?

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