



Support for the Information, Motivation, Behavioral Skills-model situated to retention in HIV-care (sIMB) in identifying theory-based intervention targets to provide point-of-care support for sustained retention in HIV medical care



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RETENTION IN HIV CARE

Failure to attend HIV care within the recommended intervals is significantly related to poorer health outcomes¹

- In the US, approximately 50% of PLWH who know their status are not retained in regular HIV care.²⁻³
- Point-of-care strategies to promote sustained retention in HIV care are important additions to HIV clinical care services.

OBJECTIVE

A situated Information- Motivation- Behavioral Skills for Retention in HIV-Care (sIMB-RiC) measure was developed and administered to:

- Evaluate the Model's (see figure 1) ability to characterize recent gaps in HIV care (> 3 months between medical visits).
- Guide point-of-care intervention strategies to reduce HIV care gaps and promote sustained retention in HIV care.

BACKGROUND

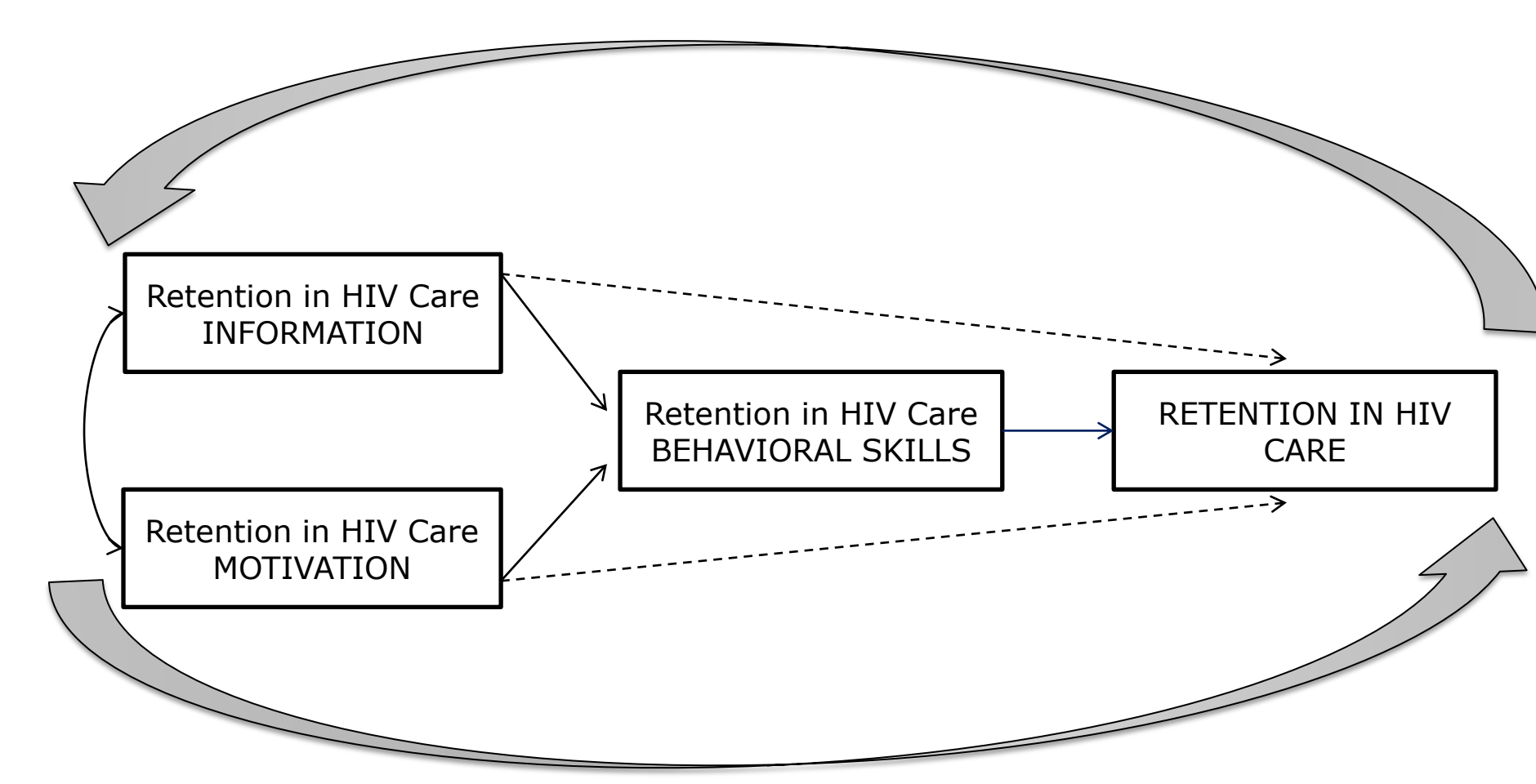


Figure 1. A situated Information- Motivation- Behavioral Skills model of Retention in HIV Care (adapted from Fisher & Fisher, 1992⁴ and Amico 2011⁵).

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A SITUATED INFORMATION- MOTIVATION- BEHAVIORAL SKILLS (sIMB) MODEL OF RETENTION IN HIV CARE

The sIMB model⁵ recently applied to retention in HIV care⁶ draws from the well-established Information- Motivation- Behavioral Skills model (IMB)⁴ to identify critical IMB determinants of retention in HIV care behavior that can be improved through targeted intervention:

- Information** – accurate information on HIV disease and treatment protocols; as well as heuristics which guide HIV care treatment decisions.
- Motivation** – personal attitudes/beliefs, social norms, and perceived social support/consequences for engaging in routine HIV care.
- Behavioral Skills** – objective and perceived ability to attend routine clinic visits over time and across different life circumstances.
- These IMB determinants are *situated* to the social and affective context of life-long disease management and the structural systems within which HIV care is negotiated.⁵(Amico, 2011).

METHOD

PARTICIPANTS

101 HIV-positive patients accessing integrated HIV care services at an inner city community clinic were interviewed in English or Spanish.

- M= 49.77 years old (SD= 9.24)
- 60% male, 78.2% heterosexual
- 54.5% Latino/a, 49.5% Black
- M= 16.26 yrs. HIV+ (SD= 6.50)
- 83% on ART, 47% non-adherent

Recommended frequency of HIV care visits is generally once every 3 months or more often. Absence from care >91 days were considered 'gaps' in care.

- In the previous 18 months, 44.6% had gapped in care.

MEASURES / ANALYSIS

Participants' HIV care-related information, motivation, and behavioral skills were assessed using a 5-point Likert-type scale:

- Information:** 18 items; {always false – always true}
- Motivation:** 31 items; {strongly disagree – strongly agree}
- Behavioral Skills:** 23 items; {very hard – very easy}

Medical chart abstractions were used to collect participant's clinic attendance for the 18 months preceding the interview.

Descriptive statistics were used to characterize participants' demography and retention in HIV care (i.e., gaps in care).

Reliability analysis was conducted on the full sIMB-RiC measure; theory-based subscales were identified via confirmatory factor analysis.

Structural Equation Modeling tested the fit and structure of the model.

sIMB-RiC MEASURE PSYCHOMETRICS

All sIMB responses were coded so that the higher values were in the direction of accurate information (vs. inaccurate information), positive beliefs/attitudes (vs. negative/ambivalent beliefs/attitudes), and greater perceived self-efficacy and skills (vs. lower perceived self-efficacy and skills).

- Scale reliability of the full 18-item **Information** scale ($\alpha = .706, k=18, n=99$), 31-item **Motivation** scale ($\alpha = .798, k=31, n=93$), and **Behavioral Skills** scale ($\alpha = .808, k=23, n=84$) provided adequate reliability.

sIMB-RiC MEASURE CONFIRMATORY FACTOR ANALYSIS

Confirmatory factor analysis was used to identify relevant sub-scales within the theoretical information, motivation, behavioral skills (IMB) constructs, yielding a total of 5 IMB sub-scales.

- Information.** Evaluation of the 18 information items produced a single **information** subscale ($\alpha = .773, k=10, N=101$; table 1a) that assessed awareness of and knowledge about care-related resources (in general and in specific contexts such as depression or drug use), biomarkers monitored in HIV-care, accuracy (or lack thereof) of relying on subjective physical health to signal need for HIV-care, and an HIV-diagnosis emotional adjustment process.
- Motivation.** The 31 motivation items reflected the two theory-based factors: **personal motivation** ($\alpha = .684, k=7, N=101$; table 1b) reflecting attitudes towards engaging in care under various conditions and contexts (e.g., when under emotional distress or anticipating negative outcomes from care attendance) and **social motivation** ($\alpha = .763, k=11, N=101$; table 1c), reflecting attitudes towards functional (e.g., treatment beliefs) and social (e.g., competing priorities, social support, anticipated stigma) facilitators and barriers to attending HIV-care.
- Behavioral Skills.** Evaluation of responses to the 23 behavioral skills items produced two scales: **care negotiation behavioral skills** ($\alpha = .856, k=11, N=101$; table 1d) reflecting interpersonal strategies for garnering support, navigating the care system and coordination of care in the context of competing priorities, and **affect-regulation behavioral skills** ($\alpha = .831, k=5, N=101$; table 1e) reflecting intrapersonal strategies for managing HIV-affect, coping, and adjustment to HIV diagnosis/treatment.

sIMB-RiC STRUCTURAL MODEL TEST

Responses to the sIMB-RiC subscales were summed and used to test the ability of the model to characterize the total number of days spent in an HIV-care gap over the previous 18 months via structural equation modeling.

- Saturated model.** Information, motivation, and behavioral skills scales have direct and indirect (i.e., mediated) effects on total days not adherent to HIV care (figure 2a) produced a good fitting model where information had no significant direct/indirect paths predicting retention, the effects of motivation are mediated by (work through) behavioral skills, and affect-regulation skills directly predict retention in care.
- Mediated model.** Information and motivation scales are mediated by (work through) the behavioral skills scales to predict total days not adherent to routine HIV care, with affect-regulation skills directly predict retention in care (figure 2b) produced a better fitting model ($AIC_{saturated} = 4361.027$ vs. $AIC_{mediated} = 4357.991$).

RESULTS

Table 1a. HIV Care Information

$\chi^2_{(14)} = 24.162, p = .021; RMSEA = .000 (.000 - .069); CFI = .950$

M (SD)	Information Items: (Always True, Mostly True, Not Sure, Mostly False, Always False)
3.93 (.39)	Living with HIV only changes one's body physically and does not change how someone feels emotionally.
3.80 (.25)	There is not much HIV doctors can do for patients who report feeling down or anxious.
3.33 (.44)	A period of 6 months or more is needed to detect any changes in one's VL/CDL.
4.11 (.26)	If someone is using drugs or drinking heavily, they can be legally denied access to HIV care.
4.30 (.20)	The only reason to schedule an appointment with one's HIV doctor is to refill one's HIV medications.
3.77 (.33)	Physical symptoms like pain, swollen joints, or headaches say how someone's HIV is doing much better than HIV VL and CD4 lab results.
3.76 (.39)	The best way to tell how someone's HIV is doing is how much weight he or she has gained or lost.
4.52 (.00)	There is no reason to see one's HIV doctor unless they are feeling sick.
2.69 (.42)	If people are not living healthy, for example if they are eating poorly, smoking, drinking or using drugs, their HIV cannot be controlled.
4.00 (.31)	If someone with HIV is using drugs or drinking a lot, there is no proven medical benefit for them to see an HIV doctor regularly.

Figure 2b. HIV Care Personal Motivation

$\chi^2_{(14)} = 16.730, p = .271; RMSEA = .044 (.000 - .111); CFI = .968$

M (SD)	Motivation Items: (Strongly Agree, Agree, Not Sure, Disagree, Strongly Disagree)
3.79 (.07)	Sometimes going to my HIV care makes me feel worse than when I am at home.
2.41 (.25)	Coming into a medical clinic every few months for any condition makes me feel like a 'weak' or 'sick' person.
3.08 (.26)	I don't like coming into my regular HIV care appointments when I feel too bad emotionally (stressed, down, angry, depressed).
3.77 (.13)	I get frustrated when I'm supposed to go to my HIV care appointments when I don't feel good physically.
2.36 (.15)	Going to the HIV care appointments is frustrating because I don't like having to think or talk about my HIV.
3.61 (.23)	I continue to struggle with the changes HIV has made in my life.

Figure 2c. HIV Care Social Motivation

$\chi^2_{(14)} = 48.681, p = .255; RMSEA = .036 (.000 - .079); CFI = .965$

M (SD)	Motivation Items: (Strongly Agree, Agree, Not Sure, Disagree, Strongly Disagree)
3.64 (.30)	If I'm not taking my HIV medications as prescribed, I would avoid coming in to my regular HIV care appointments.
3.66 (.14)	I dislike going in for my HIV care appointments because they might change my treatment like giving me a new doctor, put me on new medications, or take me off them.
3.33 (.28)	With all the things doctors want you to do for your HIV, sometimes it feels impossible to beat this disease.
2.85 (.27)	It can be frustrating to come to my HIV care appointments when other things get in my way (e.g., family, childcare, my job or some other emergency).
3.57 (.23)	If I was using drugs or drinking heavily, I would skip HIV appointments, because there is not much my HIV doctor could do for me.
3.55 (.24)	I can get frustrated when my HIV care appointments feel rushed and I don't feel I can discuss what is important to me.
3.86 (.20)	I worry about other people seeing me going into the clinic or waiting there for my HIV care appointment.
3.81 (.11)	I sometimes don't want to go to my HIV care appointments because it looks suspicious to other people that I have to go to the doctor every few months.
2.56 (.31)	It is frustrating that so many people depend on me being healthy.
3.04 (.16)	I do not get enough support from people who are important to me for keeping my HIV care appointments.
3.89 (.05)	I dislike coming to my HIV care visits when it conflicts with something my friends or family members would need me to do.

Table 1d. HIV Care Negotiation Skills

$\chi^2_{(15)} = 53.307, p = .113; RMSEA = .052 (.000 - .090); CFI = .961$

M (SD)	Behavioral Skills Items: (Very Hard, Hard, Not Sure, Easy, Very Easy)
3.59 (.25)	Getting help from family or friends to be able to go to my HIV appointments as often as I need to is:
3.41 (.09)	Paying to get to clinic for regular HIV care visits (including cost of lost hours at work, childcare, transportation, copy, and so on) is:
3.73 (.09)	Given everything else I have going on in my life, MAKING TIME for my HIV care appointment on the day and time it is scheduled is:
3.75 (.04)	Arranging things in my life like transportation, childcare, or therapy to get to my HIV care appointments is:
2.86 (.28)	Making it to my HIV care appointments if the weather is bad is:
3.68 (.09)	Coming back into the clinic for my HIV care if I have missed some appointments is:
3.83 (.05)	Making my HIV doctor understand things I don't like about my HIV care is:
3.99 (.02)	Telling my HIV doctor about problems I am experiencing is:
2.94 (.33)	Waiting as long as I need to at the clinic to see my HIV doctor is:
3.48 (.04)	Locating services and using programs that can help with medical bills and transportation to clinic is:
3.59 (.10)	Keeping up with all the new information about HIV and available treatment options is:

Table 1e. HIV Affect-Regulation Skills

$\chi^2_{(5)} = 6.282, p = .280; RMSEA = .051 (.000 - .155); CFI = .994$

M (SD)	Behavioral Skills Items: (Very Hard, Hard, Not Sure, Easy, Very Easy)
3.27 (.16)	Being able to always manage my feelings about being HIV positive in a productive way is:
3.06 (.26)	Thinking about being HIV positive without feeling anger, shame, or sadness is:
3.50 (.05)	Learning ways to think of HIV as just part of who I am is:
3.82 (.05)	Giving myself credit for small things I do to care for my HIV even when I'm not doing everything I should is:
3.31 (.13)	Coming to my HIV clinic appointments when I want to forget about having HIV is:

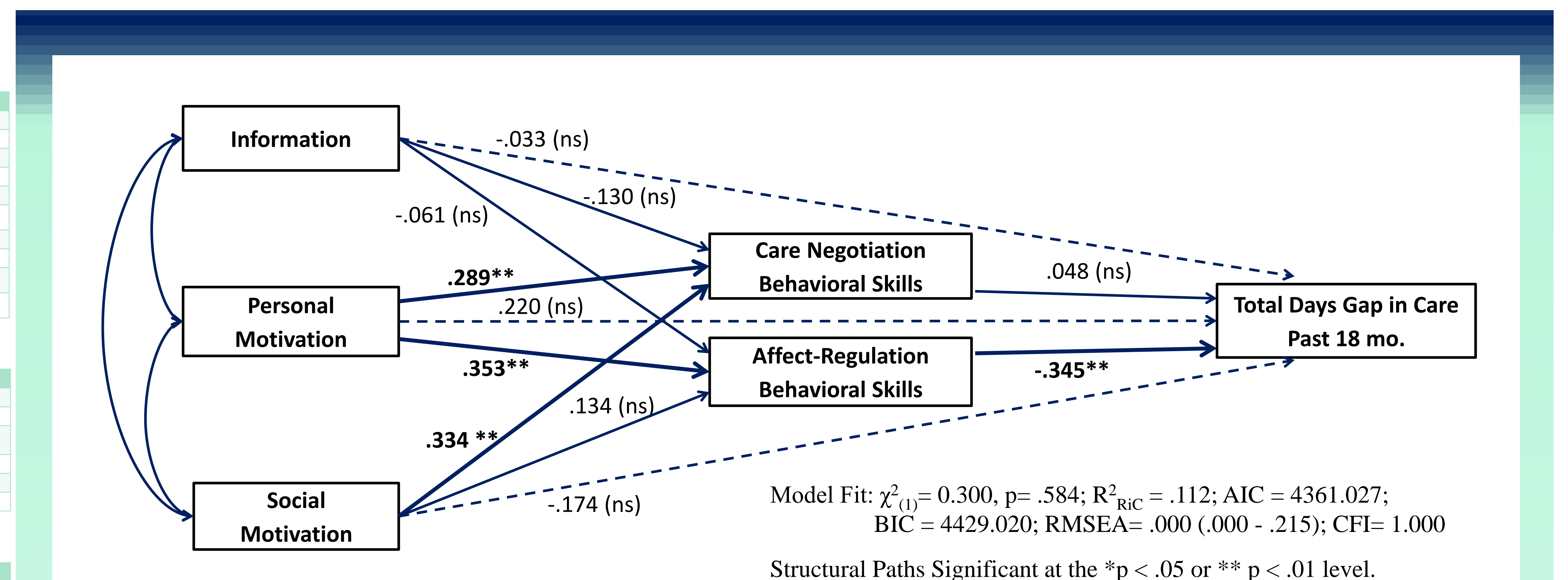


Figure 2a. Structural Test of the Saturated 5-factor sIMB-RiC Model Predicting Retention in HIV care over past 18-mo.

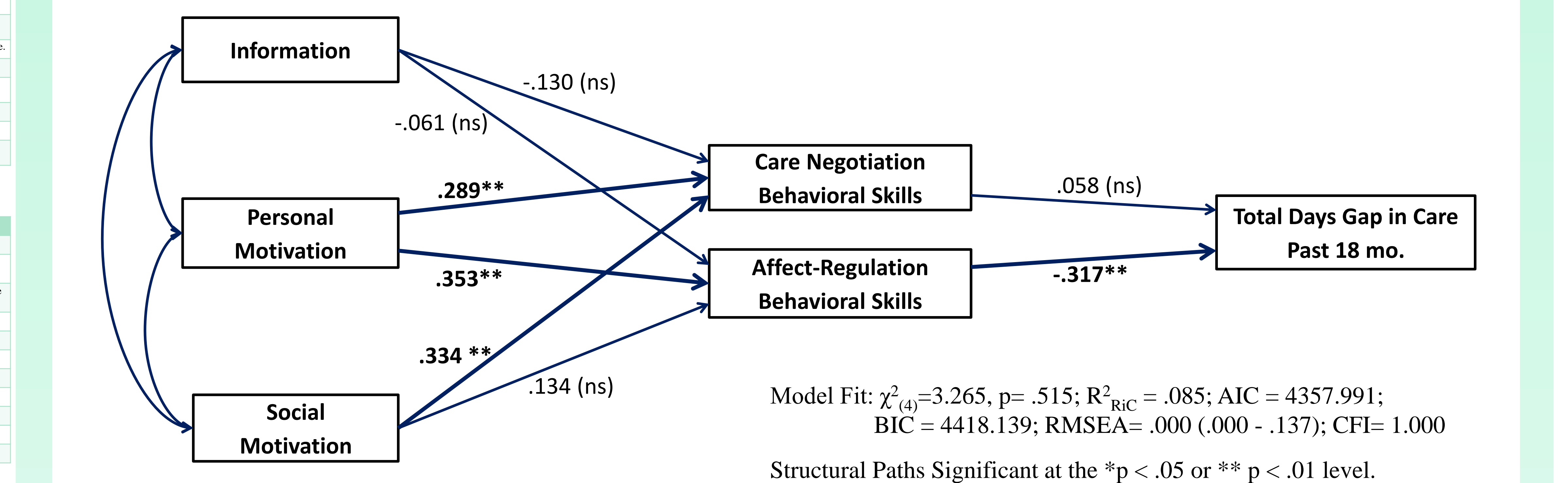


Figure 2b. Structural Test of the Mediated 5-factor sIMB-RiC Model Predicting Retention in HIV care over past 18-mo.

POINT-OF-CARE RETENTION SUPPORT INTERVENTION TARGETS

- Address negative affect towards living with HIV.**
Integrate affect-regulation exercises and individual patient follow-up to build and strengthen affect-management skills.
- Acknowledge contextual changes affect personal attitudes towards care.**
Identify feelings of emotional distress, poor physical health and internalized stigma that may impact motivation for attending routine appointments.
- Build intrinsic motivation to engage in routine care.**
Explore importance of care-related health benefits and their relation to other commitments or anticipated stigma. Support identification of gains (vs. losses) of routine care attendance.
- Promote interpersonal skills that facilitate routine care.**
Identify existing challenges and promote strengths used to garner social support from providers and important others, navigate the systems of care, and integrate care into competing priorities.
- Correct faulty decision rules guiding care attendance.**
Correct faulty heuristics (misinformation) used in deciding to attend/not attend care visits (e.g., if I've gained weight– that means I'm healthy and can put off my next appointment).

CONCLUSIONS

Evaluation of the situated Information- Motivation- Behavioral Skills model of Retention in Care (sIMB-RiC) provided clear theory-based intervention targets that may aid sustained retention in care through point-of-care strategies.

- Tools to prevent or reduce gaps in care are necessary clinical strategies to maximize individual and public health outcomes.
- In this treatment experienced sample, information on HIV and HIV care played a less proximal role in characterizing retention in HIV care, while behavioral skills for managing affect towards living with HIV emerged as the strongest predictor suggesting affect-regulation may play a more proximal role in sustained retention in HIV care. The role of affect regulation in HIV health interventions has received limited attention to date, and should be examined in further in more diverse HIV-positive populations.